NATIONAL MUSEUM OF VICTORIA

The JOURNAL OF THE DEPARTMENT of AGRICULTURE VICTORIA — AUSTRALIA

VOLUME XXXIII
PART 6

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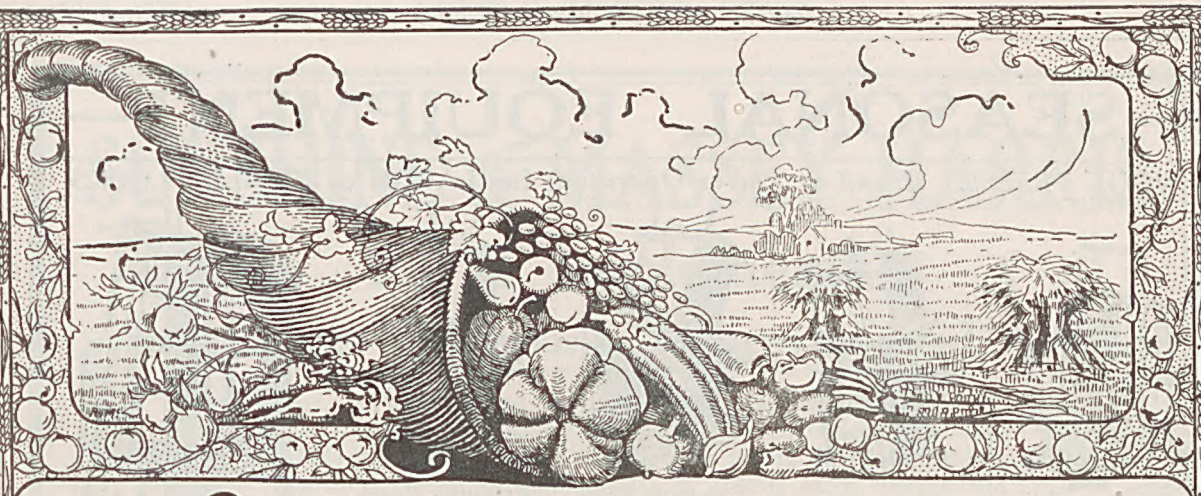

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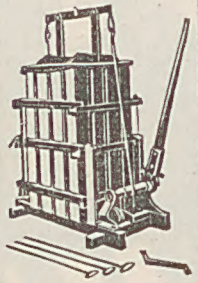

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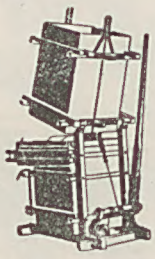

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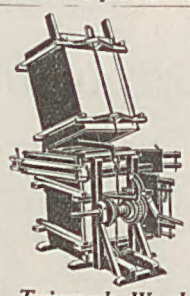

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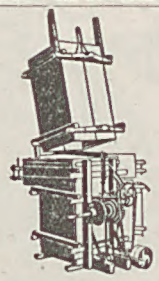

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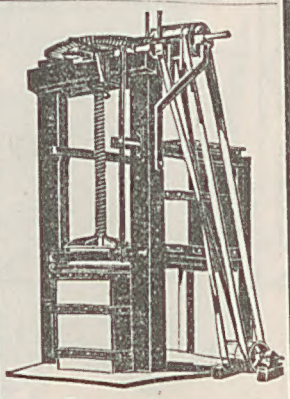

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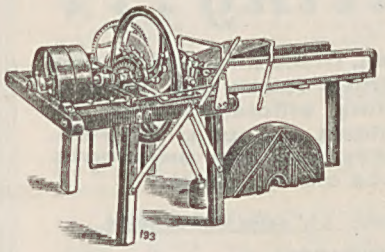

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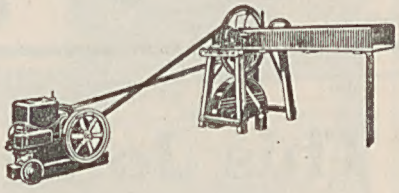

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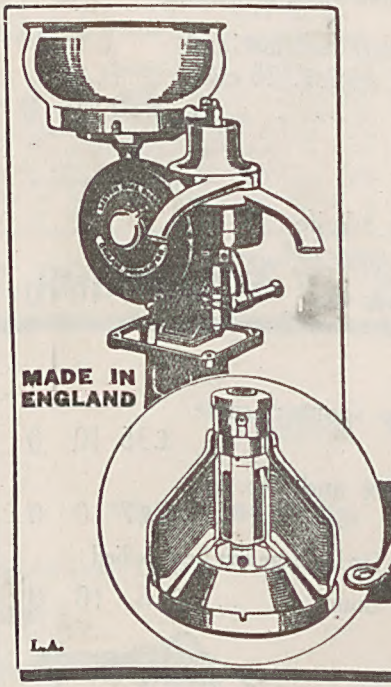

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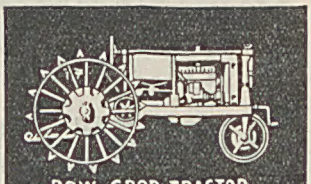
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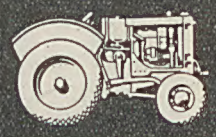
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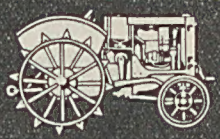
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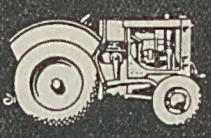
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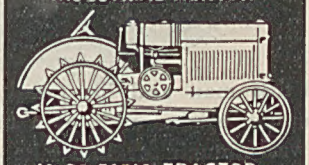
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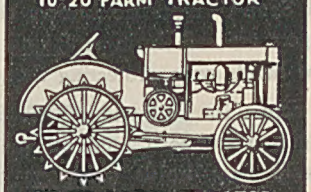
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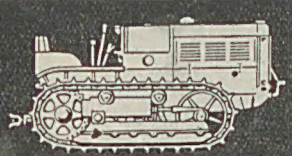
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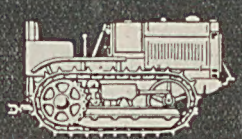
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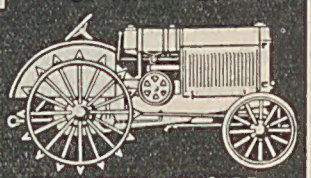
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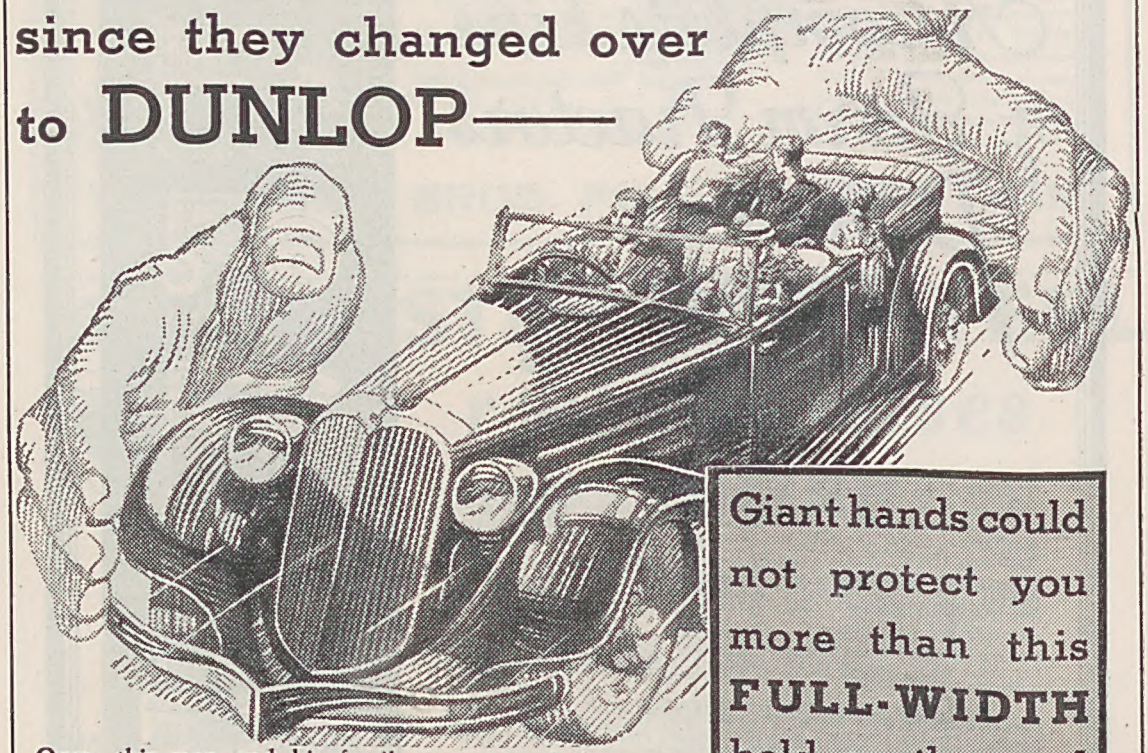

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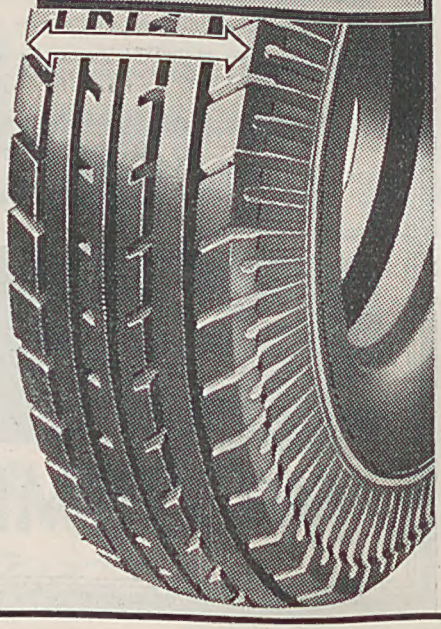

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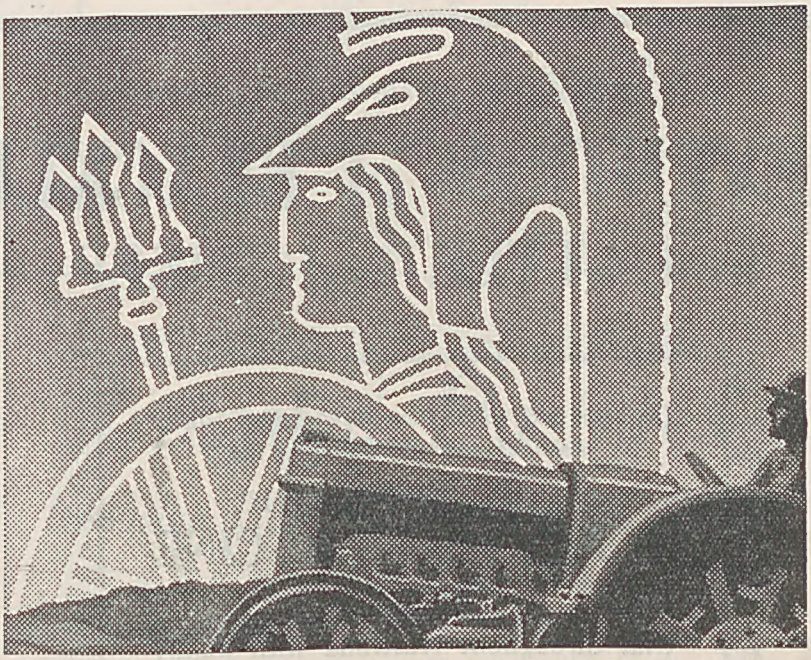

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The Journal of the DEPARTMENT of AGRICULTURE of VICTORIA

Irrigated Pastures

Intensive Grazing Tests with Sheep

By L. C. Bartels, B.Agr.Sc., Senior Agrostologist.

FOLLOWING on the successful experiences with irrigated pasture at the State Research Farm, Werribee, there has been in Victorian irrigation districts considerable expansion in the area sown to these pastures during the last ten years. The first area sown at Werribee especially for irrigated pasture was put down in 1913, and some of the earliest sown pasture is still in excellent condition, and has given ample evidence of the adaptation of standard grasses and clovers to irrigation conditions, and of their great utility for dairy farms in irrigation districts.

These mixed pastures have proved productive and long lived; they provide palatable and varied feed for stock; and their mixed character makes them flexible to variable conditions, and provides a greater degree of continuity of feed than any single species crop. They promise to be the most important crop grown under irrigation in Victoria.

The factors which govern their development are of particular importance, and subsequent to the successful establishment and demonstration of the value of irrigated mixed pastures, much attention has been given by the Victorian Department of Agriculture to their study, particularly in regard to watering requirements, and the response to various manurial treatments.

It has been shown that 2 feet of irrigation water, given in applications of 4 inches through the season, promotes the greatest production and the best distribution of growth throughout the season, while at the same time preserving a good balance of the grass and clover species.

Superphosphate dressings have been by far the most effective manurial practice, and the maximum profitable application was not reached with applications of 4 cwt. per acre per annum.

Pasture studies are incomplete without attention to the influence of the grazing animal, but many of our investigations have been made with the mowing machine and scales as the instruments of measurement. It is now well known that varied grazing treatments govern the character and production of pastures, and in this article it is proposed to outline the story of a grazing test with sheep on irrigated pasture. This test was commenced at the State Research Farm, Werribee, in 1929, primarily to test the influence of two contrasted systems of grazing on an irrigated pasture. Sheep were chosen as the grazing animals.

The test is being carried out on an area of 10 acres of pasture which was laid down in 1916. The component species of the herbage are perennial rye grass, Kentucky blue grass, cocksfoot, white clover, strawberry clover, subterranean clover, and many annual species (Poa annua is plentiful in winter). In early years the paddock was grazed with mixed stock, but before the experiment started it was grazed at intervals by sheep, and a condition of balance had been achieved.

For the purposes of the experiment the area of 10 acres was divided into two equal sections, which will be referred to as A and B. These in turn were subdivided, A into two 2½-acre sections, and B into ten ½-acre sections.

Since the inception of the experiment the whole field has been grazed intensively by sheep of varying classes—the A section by grazing each half alternately for periods of ten days, and the B section by grazing each ½-acre block for two days in rotation—except for a period when one-day changes were made.

The comparison thus lies between two systems, one where pasture is subjected to grazing for ten days and rested for ten days, and the other where pasture is grazed intensively for two days and rested for eighteen days. In both cases the round of grazing is complete in twenty days.

An endeavour has been made to stock both sections to full capacity at all times, and in general this has been achieved, although it sometimes involved a slight departure from the schedule laid down. Adjustments have been made periodically by varying the number of sheep, these adjustments usually being based on observations of the amount of feed available, and on the ability of the sheep to clean up the pastures on the area being grazed.

Regular weighings of the sheep have been made at intervals of ten days. This work has been carried out expeditiously on a platform scale bearing a tared crate with sliding doors. Into this the sheep were driven through a short race from yards built near the experimental grazing area.

The objective has always been to keep the sheep in a progressively good condition compatible with a complete use of the herbage offering. The period of greatest stress is during the winter months, and during all the seasons under review the pasture has been very severely treated.

Reviewing the test for the five years just completed where sheep have been carried continuously under systems of intensive grazing, one must first emphasize the immense productivity of the irrigated pasture. The aggregate production expressed in live weight for the five years over the whole 10 acres was 37,000 lb., the relative production from the two sections being:—

Section B.	*Section A.*
3,881 lb. per annum.	3,516 lb. annum.

That production has been sustained is illustrated by the following figures, which show the yields from the two sections in each of the five years:—

	Section B. Ten ¼-acre plots grazed in 20-day rotation. lb.	*Section A.* Two 2½-acre plots grazed alternately. lb.
1930	856	660
1931	595*	721
1932	550	436
1933	926	879
1934	954	820
Total, five years	3,881	3,516

* Rotation shortened to 10 days.

Five classes of sheep have been used in the tests as follow:—

1930, Comeback wethers introduced in November, 1929, as 2-tooths and removed in December, 1930.

1931, Cross-bred wethers for a period of three months to 1st April, 1931, when crossbred weaner ewes were introduced.

1932, Crossbred weaner ewes introduced on 1st April, 1931, and grazed in varying numbers, unmated to December, 1932.

1933, Crossbred ewes, 2-tooth, mated with Suffolk rams, and put on plots in January, 1933, and removed at end of year.

1934, Crossbred ewes, 4-tooth, mated with Ryeland rams, and carried from January, 1934, to December, 1934, and retained.

The sheep were drawn from the main flocks of the farm. At the commencement of the experiment 2-tooth wethers were selected because it was considered they would be growing rapidly, and it was intended to retain these till they were mature.

In the first year the carrying capacity exceeded expectations, and the number maintained through the winter months in good condition was eight per acre. It was soon observed that even on the larger areas grazed for ten days the grass was very efficiently used, and a real difficulty was presented in properly cleaning up the herbage on the small plots, while adhering to a twenty-day rotation.

The progressive increases in weight showed an advantage in favour of the small plots, and, as previously stated, in thirteen months ending December, 1930, 800 lb. per acre increase in live weight was produced on the small plots, and 600 lb. on the larger plots. These figures were interesting, and the next query was—could such production be sustained?

At the end of the first year a disturbing development occurred—balanitis affected the wethers, and it spread rapidly till 45 per cent.

of the flocks showed signs of the disease. It was problematical whether this was a trouble arising from the feed, which it was realized was of a particularly high nitrogenous character.

An endeavour was made to cure the trouble by antiseptic dressing, but with only partial success—although the worst consequences were averted, and only one animal died. It is interesting to note that the wethers showing infection were apparently not much handicapped, and their weight and their periodic progress were only slightly behind those of non-infected animals. One wether died from tetanus, and it is quite likely that infection was incurred from the ground through the balanitis lesion. Because of this trouble the wethers were sold. They were in prime condition.

Sheep and lambs on the Rotational Grazing Tests.

Compare the ungrazed pasture on the right with the heavily grazed pasture on the left.

A new line of wethers was introduced on 2nd January, 1931, but on 12th January, 1931, 17 per cent. of these showed signs of balanitis. It was then decided to conduct the grazing with ewes, and a line of ewe weaners was put on the plots on 1st April, 1931.

Reductions in the numbers grazing had to be made during the winter months, but 106 ewes were carried through in good condition. By mid-August, surplus feed was available, and extra sheep from those previously withdrawn were returned. These added sheep were in slightly better condition showing that they had benefited by the more varied conditions presented on the farm proper. These ewes were retained for the third year of the test. They were unmated.

AVERAGE WEIGHTS OF 40 SHEEP WHICH WERE GRAZED CONTINUOUSLY ON PLOTS FOR 19 MONTHS.

—	½-acre Plots (40 Sheep).	Total Flock (82).	2½-acre Plots (39 Sheep).	Total Flock.
1.4.31	69·8 lb.	67·9 lb.	70·2 lb.	69·5 lb.
8.12.31	129·2 „	126·9 „	128·1 „	128·8 „
8.12.32	154·7 „	142·3 „	143·5 „	144·5 „
Increase ..	121·6 %	109·5 %	104·3 %	107·9 %
Mean fleece weight—				
28.9.31 ..	4·8 lb.	4·8 lb.	5·1 lb.	5·1 lb.
4.10.32 ..	10·7 „	10·6 „	10·3 „	10·6 „

In the second winter during which these ewes were carried, the numbers were reduced to 40 on each 5-acre section. Care was taken that these 40 were sheep that had been included in the 53 carried during the winter of 1931, and this means that on the 10 acres 80 of the ewes were subjected to the intensive grazing conditions without intermission for nineteen months. The 40 sheep on each section were kept under close observation, the details of which are shown in the accompanying table.

To test the value of irrigated pasture for fattening lambs, a small flock of eighteen lambs was introduced into the small plots. Towards the end of 1932 these were moved in advance of the main flock. Their progress was so good (they gained 364 lb. in 61 days) that it was decided to make a more complete investigation of fat lamb production under intensive grazing conditions.

A crucial test which has been applied to these intensively grazed pastures is the lambing down of ewes and the rearing of the lambs. This has been accomplished successfully during the fourth and fifth years of the experiment, and not only has it been done, but in each year the minimum number of ewes carried has never been fewer than eight per acre, and these ewes and their lambs have been unable to keep down the subsequent spring growth. It is not denied that considerable troubles present themselves, but the mortality has been low compared with sheep on other sections of the farm with free range, and the first draft of lambs sold in 1933, in open market, brought 20s. 7d. In 1934 the satisfactory price of 17s. 11d. was obtained for the first draft of 60, and 20s. 11d for a second draft sold in January.

Rotational Grazing Trials, 1933-1935.

Reviewing the carrying capacity and live weight increases of the sheep for the year 1933, we find that, on the high concentration series (½-acre plots), ewes were carried at the rate of 12.37 per acre per annum. In addition, lambs were carried for a period of 160 days at the rate of 9.34 per acre. On the moderate concentration series, (2½-acre paddocks), the averages were 11.39 ewes per acre per annum, and 8.03 lambs per acre for 160 days.

The live weight increases on the ½-acre plots during this period were as follow:—

Ewes	..	1,689 lb.
Lambs	..	3,034 lb.
Total	..	4,723 lb. = 9.45 lb. per

acre, and on the 2½-acre plots—

Ewes	..	1,687 lb.
Lambs	..	2,784 lb.
Total	..	4,471 lb. = 894 lb. per acre.

Allowing for deaths during the year, the net gains were 4.632 lb. and 4,397 lb. on the small and large plots respectively, or a total of 9,029 lb., giving an average of 903 lb. per acre.

For the period 29th December, 1933, to 7th January, 1935 (374 days) an equal number of ewes was grazed on each section. Each flock ranged from 80 to 40 according to the time of year. The total grazing on each 5 acres, expressed in sheep days, was 20,920, an average of 11.13 sheep per acre throughout the period. The live weight increase of the ewes on the ½-acre plots amounted to 2,334 lb., or an average of 0.112 lb. per sheep day, and on the 2½-acre areas, 2,264 lb., or 0.108 lb. per sheep day.

In addition, 7.90 lambs per acre were carried on the ½-acre plots, and 6.56 on the 2½-acre areas, each for a period of 154 days. In this case the live weight increase amounted to 2,437 lb., or 0.401 lb. per lamb day, and 1,837 lb., or 0.364 lb. per lamb day, respectively. Thus there was a total live weight increase in the ewes and lambs of 4,771 lb., an average of 954.2 lb. per acre on the ½-acre plots, and 4,101 lb., an average of 820.2 lb. per acre on the 2½-acre sections, or a difference of 134.0 lb. per acre in favour of the smaller areas.

There was an increase also in the fleece weights of the ewes which were on the plots continuously, from 11.41 to 12.00 lb. per fleece in favour of the ½-acre sections.

During the period of the experiment the sheep have had trouble from worms, fluke, black disease, entero-toxaemia, and foot rot, but as each disease presented itself appropriate treatment mitigated the trouble.

The concentration of sheep on the small areas, which is a necessary feature of the scheme, has never failed to evoke expressions of surprise from practical sheep men. For occasional periods this has reached the very high figure of 200 per acre, and it is obvious that this congestion accentuates the risk of disease.

Worm infestation affected the condition of the sheep, particularly the lambs. Copper sulphate and nicotine sulphate doses have been given at intervals when evidences of worms were apparent. In the case of liver fluke carbon tetrachloride was administered, but

Intensely grazed irrigated pasture at the Werribee Research Farm.

This pasture which is 19 years old is growing on a heavy clay loam. Perennial rye-grass, Kentucky Blue, Cocksfoot, White Clover, and Strawberry Clover comprise the sward.

Measuring the yield of irrigated pastures. Left, grazing and yield sampling; Right, motor mowing.

efforts were made also to combat this trouble at its source by destroying the limnoea snails, which are intermediate hosts of the fluke. It is known that copper sulphate in a concentration of one in a million will kill the snails, so the expedient was adopted of dissolving the bluestone in the irrigation water at the inlet to the farm, thus securing an effective distribution.

Vaccination against black disease was very effective, and it is felt that the incidence of entero-toxaemia was restricted by this means also. Although the deaths from this latter cause proved to be the most disconcerting of all, they have not been numerous.

Conditions on irrigated pasture seem to be particularly favorable for the spread of foot rot. Regular treatment by running the sheep through a foot bath of copper sulphate solution has helped to keep the disease in check. Sheep infected with foot rot show appreciable declines in weight, and although this disease was much in evidence during 1933, the ewes carried in 1934, which were bred in the Western District, did not show the trouble to the same extent.

The sheep are not removed from the pasture during irrigation. This operation, which usually occupies some 30 hours, involves the absorption of two inches of water only, and sometimes a supplementary watering is given. This is an index to the character of the soil, and shows that the outstanding productivity of the pasture is not attributed to any superior physical condition of the soil. This soil was not adapted for lucerne, which was the pioneering crop sown on the better irrigated areas of the farm, and the undoubted success of the pasture opened avenues for the development of the heavier soils in irrigation districts.

Some twelve irrigations are given each summer; these are regulated by practical considerations, but the total water given is approximately 2 feet per annum, this amount being determined by previous experiments as the optimum quantity to apply. In midsummer irrigation at fortnightly intervals is necessary.

During every year of the experiment the sheep have developed splendid fleeces. Except in 1930 they have been shorn by hand, and the average clips (which would of course have been slightly heavier from machines), are as follow:—

—	—	½ acre.	2½ acre.	Flock Average.
		lb.	lb.	lb.
1930	Four-tooth wethers ..	8.32	8.63	8.47
1931	Two-tooth cross-bred ewes	4.8	5.1	4.95
1932	Four-tooth cross-bred ewes	10.7	10.3	10.6
1933	Four-tooth cross-bred ewes	10.01	9.66	10.35
1934	Six-tooth cross-bred ewes	12.00	11.41	11.71

Computed from the records of carrying capacity, and assuming that the production of the wool is in proportion to the time the sheep were on the plots, it will be seen the wool production per acre is very high; never lower than 1 cwt., and approximating to 140 lb. in 1932, when maiden 4-tooth ewes were carried. The average clip from the sheep on the small plots has been slightly higher than from those on the 2½-acre plots, and it was noted that the sheep withdrawn from the intensive grazing areas

during the winter and placed on more abundant irrigated pasture bore slightly heavier fleeces still.

It should be noted that the annual top-dressing given to these intensive grazing plots averages 2 cwt. of superphosphate per acre. In the manurial tests where the plots are cut with a motor lawn-mower, 4 cwt. per acre has consistently produced the highest yields, and the suggestions are that extra dressings of superphosphate would induce even greater yields on these mowed plots.

Although the drain on these mowing areas is greater than on the grazed plots, because of the complete removal of the herbage, and a greater fertilizer response is to be expected after a time on the mowing sections, it may be asserted that the carrying capacity would be increased if the annual top-dressing were 4 cwt. per acre. This amount is applied regularly by many irrigation farmers.

No supplementary feed has ever been given to the sheep grazing on the area, although it could be said that such feeding would be desirable. Analyses of pasture clipped at three weekly intervals have shown a protein content on a dry basis of over 25 per cent.

In view of this fact it is proposed to conduct a separate test wherein two classes of supplementary fodder will be given to the sheep on the short pasture, one will be a straw and the other a starchy fodder. The sheep have had plenty of salt, and they consume large quantities.

Blood tests have been made by the Director of the Veterinary Institute at monthly intervals, and it is hoped to learn from analysis what association exists between the mineral content of the blood and the progress of the sheep. Tests so far indicate that the inorganic phosphorus in the blood is normal.

Throughout the tests the sheep have been exposed to the full rigors of the weather, and ordinarily this means that they have had to withstand many bleak winds. On odd wet days they stood about without eating much, but during prolonged wet weather they grazed normally. On many occasions when the weighings were made just after a wet day it was observed that they showed a decline in weight. An attempt was made to test the adverse influence of this exposure by rugging some of the sheep. No significant benefits were noted.

In conjunction with these grazing tests yield samplings have been made and botanical surveys carried out to determine the selections of species. The technique of the sampling was based on an organized scatter of the samples adopted after a uniformity test on the pasture. Twenty-five samples, each 8 sq. links in area, were taken from the ½-acre sections by clipping with a hand-shearing machine just before the sheep were admitted, and 35 samples were clipped as soon as they were removed. Botanical surveys were made at the same time. The drying and cleaning of the samples has involved so much work that the full results of these tests are not yet available, but they reveal that the average daily consumption of herbage is variable, and ranged from 6 lb. to 24 lb. per day.

Sheep are apparently capricious in their choice of species—none of those composing the

[*Continued on page 271.*

Lambing time on the plots.

Beekeeping for Beginners

Transferring Bees

By J. Thomlinson, Apiary Inspector.

WHEN about to transfer a colony of bees and brood comb from a box, or a position naturally selected, such as the hollow of a tree, or a cavity between the studs of a weatherboard house, to a modern frame hive, it should be remembered that the success of the operation will be governed to a great extent by the ability of the operator to employ the natural instinct of the bee to his own advantage.

Once a colony of bees becomes thoroughly alarmed, the individual members rush to the honey cells, and gorge as much honey as they can possibly carry. Seeming to realize the possibility of the destruction of their home, they concentrate on securing a sufficient supply to enable them to make a fresh start should the necessity arise. Bees gorged with honey become less active, and may be driven from the combs with very little risk of the operator being stung. On the other hand, if the colony be disturbed without creating the necessary sense of alarm, the bees may become vicious,

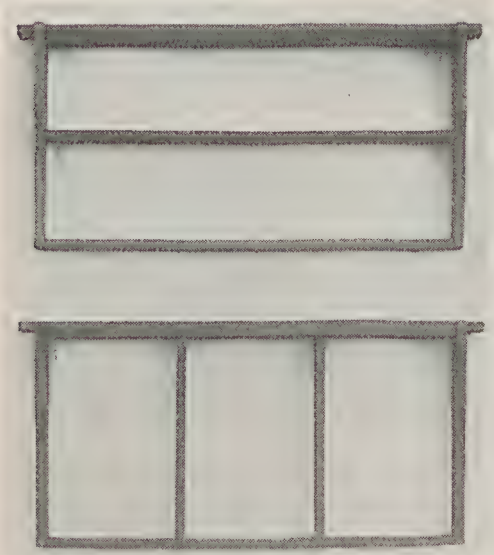

Fig. 1.—Frames fitted with wooden partitions to hold small pieces of brood comb.

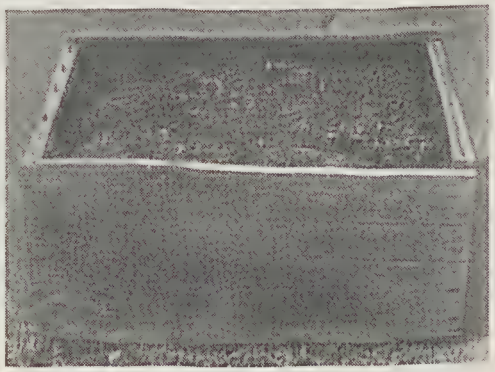

Fig. 2.—Box containing bees removed from stand and placed bottom upwards.

and put up a vigorous fight in defence of their stores. To bring the colony to a state of submission, a steady stream of smoke should be directed on to it. In the case of a box hive, smoke at the entrance would be sufficient, but in the walls of a house, where the combs are probably a distance of some feet from the entrance, advantage must be taken of every possible means of directing smoke into the cavity in which the colony is situated before removing the boards.

Transferring may be carried out at any time. But in the event of local conditions being unfavorable for the gathering of nectar in sufficient quantities for comb building and the storage of a reasonable surplus of honey, the colony must be fed, or assisted with frames of comb containing honey. Transferring, generally speaking, is best carried out during early spring, the work being completed while the cape weed is still in bloom, and before the combs become laden with honey. Combs laden with honey are difficult to handle, and consequently retard the work.

Before commencing to transfer a colony of bees, the operator should make certain that all necessary material and implements are at hand. These should comprise a complete hive with frames wired and fitted with comb foundation; a lighted smoker, and fuel for recharging; two frames fitted with wooden

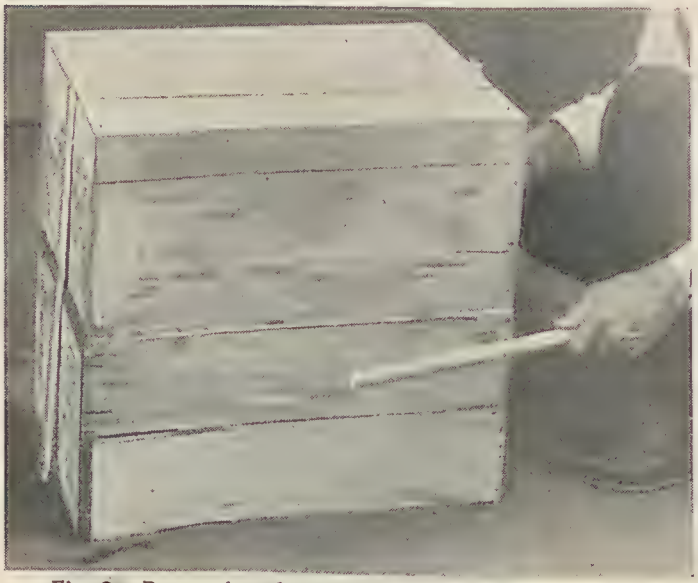

Fig. 3.—Drumming the bees from comb in a box hive.

partitions as shown in Fig. 1; a ball of string at least 30 feet long; a hammer, chisel, and pair of pliers, if working on a box hive, also necessary tools if the colony is located in the wall of a house; a bucket containing water to keep the hands and implements free from honey, and a long-bladed knife for removing combs, and fitting the brood into frames. Should the colony be located in a box, place the nozzle of the smoker near the entrance, and direct a strong cloud of smoke well into the centre, working the bellows for about ten or fifteen seconds. Step aside for about half a minute, then raise one end of the box, and again use the smoker, directing the smoke between the combs. Lower the box, and after a period of one minute remove it to a convenient situation close at hand, placing it bottom upwards as in Fig. 2. If considered necessary, a few puffs of smoke may be used again. Then place a box of the same width and length as the one containing the bees on top of the inverted combs, and nail a cleat at each end to keep it in position (Fig. 3). With a short stick in each hand lightly beat, or drum as it is termed, the sides of the box containing the bees. The drumming should be continued for about fifteen minutes, by which time the majority of the bees should have deserted the combs and retired to the top box. The cleats should now be removed, and one end of the box raised to note progress. If the bees have not left the combs, replace the cleats, and continue drumming, but if the bees appear to have retired to the top box (Fig. 5), it should be removed and placed in position in the old stand, raising one end with a small chock to allow bees on the wing to gain admittance.

Under normal conditions the dismantling of the box and transferring of the brood may be proceeded with on the spot, but should there

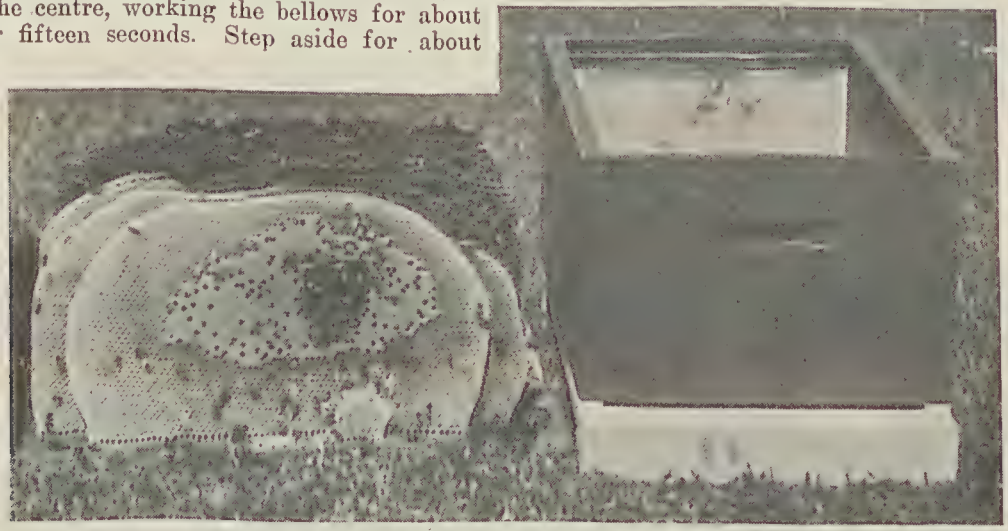

Fig. 4.—Sides and ends of box removed exposing combs, and hive in position to receive transferred brood.

Fig. 5.—Top box removed, showing bees.

be a number of colonies of bees in the vicinity, and a scarcity of bloom, it will be necessary to complete the work under cover. Much inconvenience may be caused by strange bees attempting to take the exposed honey, therefore the work should be completed, and exposed honey removed as soon as possible.

To detach the combs from the sides and ends of the box, pass the blade of a knife completely around the inside, keeping it close to the wood, then with the aid of the chisel, hammer, and pliers remove the sides and ends exposing the comb, as in Fig 4. To remove the combs from the remaining portion of the box, take hold of the top of the nearest with the fingers of the left hand, using a knife in the right hand to detach it from the wood. Stray bees should be brushed from each comb as it is removed. A long quill or small branch with a cluster of leaves will serve the purpose if a brush is not available.

Empty combs and combs containing honey should be placed on one side, while those containing brood should be fitted in frames, which previously have been placed close at hand, as

Fig. 7.—Bees dumped in front of hive containing transferred brood.

Fig. 6.—Brood fitted and tied into frames.

follows:—First cut four pieces of twine each 24 inches in length, lay them on a flat surface about 3 inches apart. Place the empty frame on top of the strings, then cut the brood to fit neatly into the frame, taking advantage of the frames fitted with wooden partitions to hold the smaller pieces (see Fig. 1). As each frame is filled with brood, tie the ends of the string tightly over the top bar (Fig. 6), and place in the hive. The quantity of brood in a box hive will vary according to the strength of the colony and local conditions, but four frames should accommodate the brood from the average box. When completed, they should be moved to the centre of the hive, and the balance of the frames already wired and fitted with comb foundation, placed on each side. Arrange a mat on top of the frames, and fit

the lid. The hive is then ready to receive the bees. Move the box containing the bees to one side, and spread a sack or sheet of strong paper on the spot from which it was removed. Place the hive on the sack or sheet with the entrance facing in the same direction, and as near as possible in the same position as that of the original box. Take the box containing the bees, and with a sharp jolt dislodge them within a few inches of the hive entrance (Fig. 7); then with the aid of the smoker drive them into the hive, using a small stick or twig to prevent clustering (Fig. 8). If this precaution be not taken, the bees may cluster

Fig. 8.—Driving the bees into the box.

over the front of the hive, completely blocking the entrance, causing delay, and possible loss of the queen. During this operation the smoker should be used with discretion, an occasional light puff being all that is necessary.

Honey taken from the box and stored in old brood combs hardly justifies the loss of time and trouble necessary to render it fit for the table, but it may be returned to the bees by the following method:—Install a super or second story on the hive. The combs containing the honey should then be stood in a small box or other receptacle, a wedge being fitted between each comb to allow free access to the bees. Put the box inside the super on top of the frames, taking the precaution to see that the lid is perfectly bee tight, otherwise robbing may be encouraged. When the honey

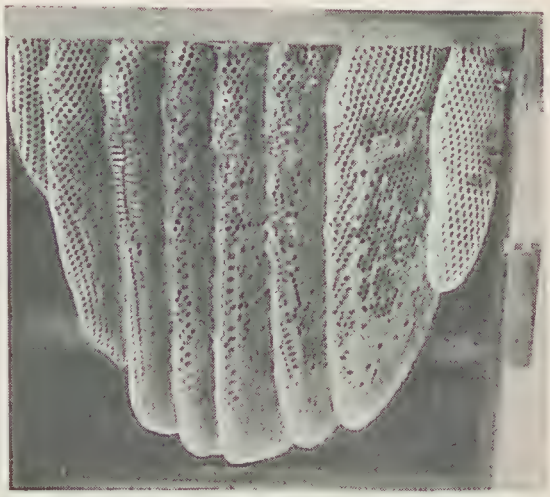

Fig. 9.—Lining boards removed exposing combs of colony located in a cavity between the studs of a balcony.

has been removed by the bees, the super and receptacle containing the empty combs should be taken away. The hive should be opened within a week, and the brood comb examined. Under normal conditions, it will be found that the comb has been repaired and securely

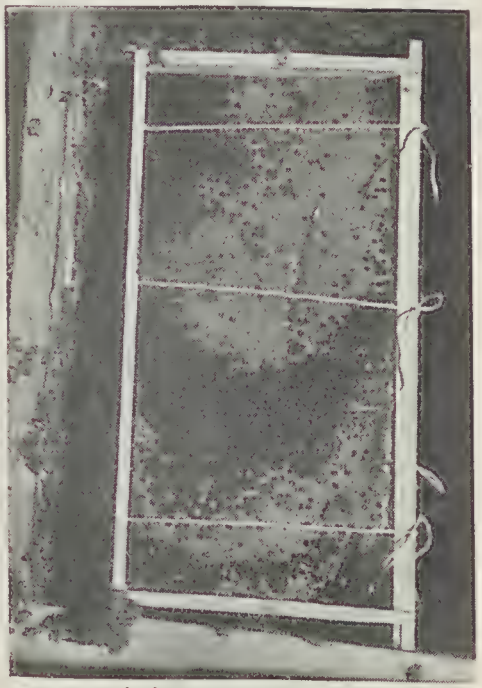

Fig. 10.—Brood transferred to frames and replaced in cavity.

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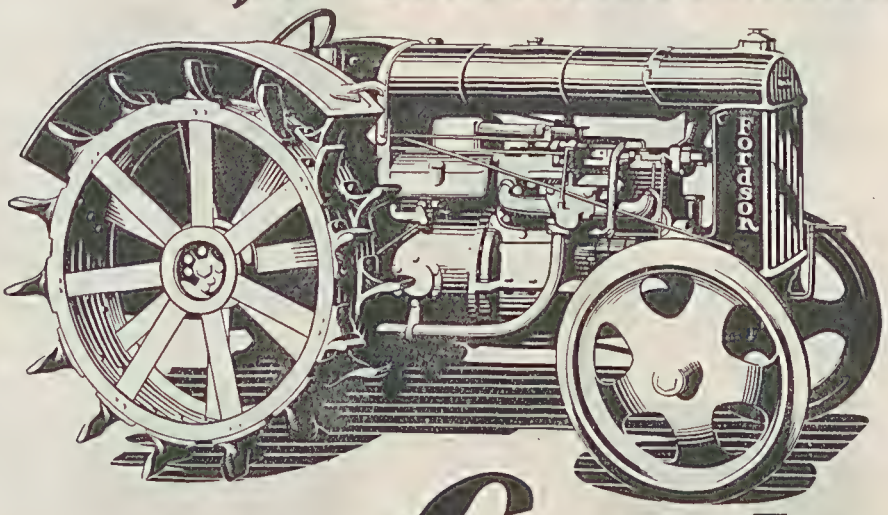

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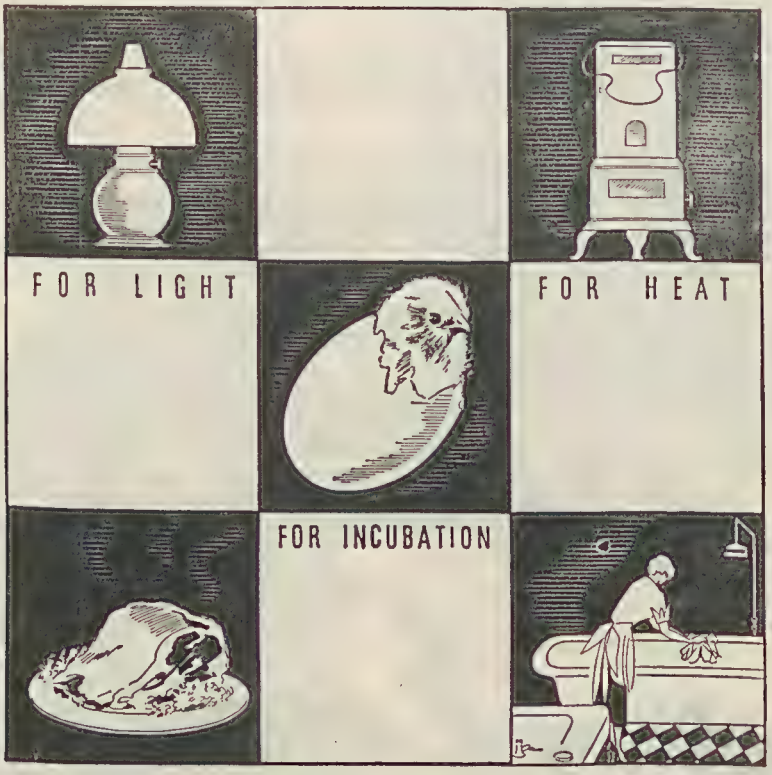

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attached to the frames, in which case the string should be removed. As the colony progresses and new comb is built, the original comb taken

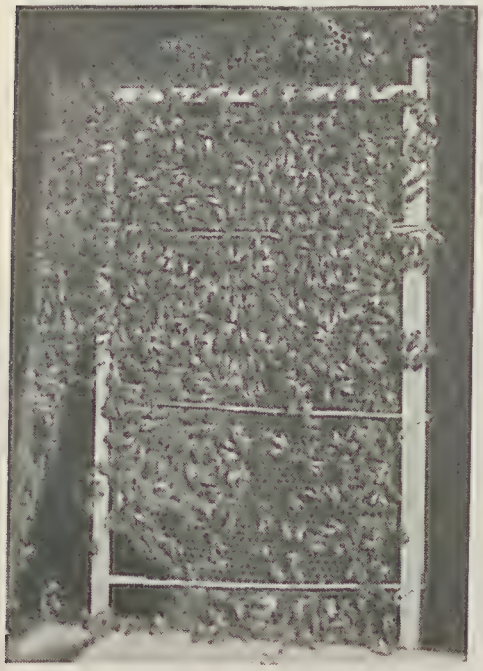


Fig. 11.—Bees returning to brood.

from the box should be discarded by placing the frames containing new comb in the centre of the hive, and gradually working the old comb to the sides, removing it and replacing with frames fitted with comb foundation, when convenient.

To transfer a colony of bees from the hollow of a tree or part of a dwelling house, the foregoing principles would apply, but a considerable variation in method may be necessary. In Fig. 9 a colony of bees is shown located in a cavity between the studs of a balcony wall. The lining boards have been removed, exposing the comb. In this instance, while removing the comb, the queen and majority of the workers dispersed, escaping through spaces caused by the overlapping of weatherboards on the outside. To have attempted to follow the bees would have meant the removal of weatherboards from the outer wall. To avoid this, the brood was fitted into frames, and replaced in the cavity from which it was taken (Fig. 10). A sack was then placed over the cavity to exclude the light, and smoke directed into the spaces where the bees had taken refuge. The bees returned and formed a cluster over the brood (Fig. 11). The frames and brood, with bees attached, were then placed in the hive.

When transferring a colony of bees from a dwelling, the hive should not be removed until night. Where possible, a clear day should elapse before removal in order to allow field bees and stragglers to find the hive; otherwise inconvenience may be caused for some days by those left behind.

Irrigated Pastures

(*Continued from page* 266).

herbage was entirely neglected, and at different times every one was eaten with avidity. In one ½-acre section the perennial rye-grass was eaten down. In an adjoining section strawberry clover would be punished to the neglect of the rye-grass.

The pasture sward to-day is in better condition than ever before, and this despite the heavy drain on the soil fertility. The ultimate test, of course, is in the sustained productivity and the condition of the sheep which it carried, but the composition of the herbage mixture still embraces the most valuable species. The proportion of Kentucky blue grass and subterranean clover shows a diminution. This is noteworthy, because many contend that these particular species should never be included in irrigated pasture sowings because of their aggressive character.

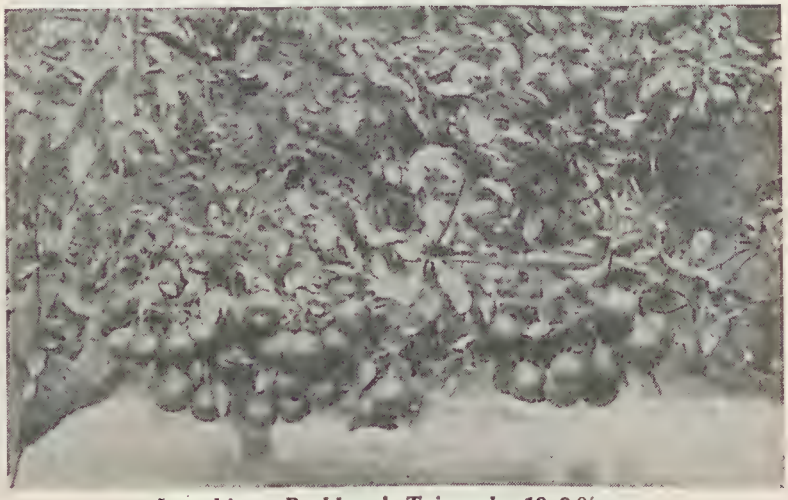
This experience supports the teachings of the Department that with liberal manuring, regular watering, and hard grazing the most valuable elements are fostered to the exclusion of the less worthy. One remarkable result has been the entire eradication of rushes from a low-lying section of the field. This has been a direct consequence of the controlled intensive grazing. The significance of this lies in the fact that there are some who do not favour irrigated pastures because they contend that the frequent watering induces the spread of rushes.

Pollination of Pears

Results of 1934 Tests

By E. E. Pescott, F.L.S., Senior Horticultural Instructor; and F. J. Greatorex, Orchard Supervisor

THE pollination work carried out by the Horticultural Division of the Department of Agriculture during 1934 included the study of the Josephine, Doyenne du Comice, and Beurre d'Anjou pears. The "branch unit" method of investigation, as described by A. G. Strickland, M.Agr.Sc., in an article on "Pollination Problems," which appeared in this *Journal* for August, 1934, was continued, and the methods of collection and application of pollen, as well as the counting and recording of fruit, were identical. The above varieties of pears were selected owing to the usual difficulties presented in the low production, and also owing to the absence of definite pollination knowledge of these varieties.

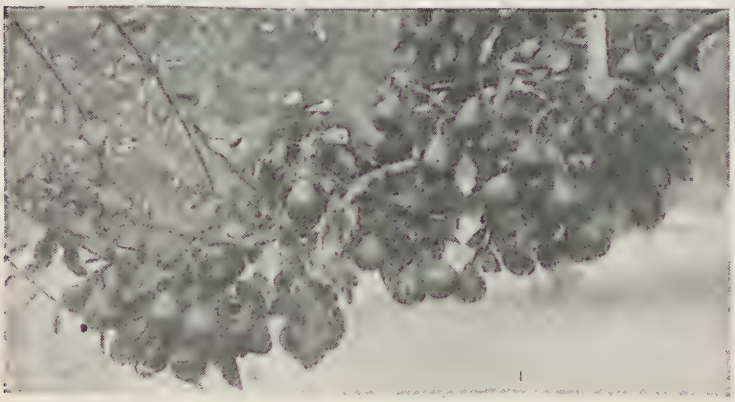


Josephine x Packham's Triumph—19·8 % set.

Josephine.

Two rows of Josephine de Malines were selected for the experiment, the trees growing in the orchard of Mr. W. Lipscombe, of Croydon. On the west side of these pears were two rows of Winter Cole, and adjacent to these was a strong row of *Pinus insignis* trees. On the east side of the Josephines were three rows of Keiffer Hybrid pears.

Pollen of Winter Cole, Winter Nelis, Black Achan, and Packham's Triumph pears was collected for the work. Owing to the wet season, irregular supplies only of pollen could be obtained, and where old pollen was used, even if only a week or two old, the results were much poorer than was the case with freshly collected material.



Josephine x Winter Nelis—19·4 % set.

Josephine x Black Achan—3·1 % set.

In addition to pollinizing the blossoms with pollen of the varieties Doyenne due Comice and Beurre d'Anjou branches were left "open" so that the usual insect visitors could effect the transfer of pollen, and "bagged" branches were pollinized with Josephine pollen, that is they were "selfed."

In some cases the pollen was applied three times, and in others twice only, owing to the scarcity of material. The value of three applications was indicated in the case of Josephine pollinated with Winter Nelis pollen, where a set of 20.7 per cent. was obtained, while two applications gave a set of 16.7 per cent. only. Further, three applications of Winter Cole pollen resulted in a 16.6 per cent. set, and two applications in a set of 11.5 per cent.

A comparison of these results shows that Packham's Triumph and Winter Nelis are satisfactory pollinizers for Josephine. This bears out the generally recognized opinion of fruit-growers. Black Achan is a very free bloomer, producing a good supply of apparently first class pollen. But the results indicate that this pear is quite unsuitable as a pollinizer for Josephine, especially with regard to the paucity of its seed production.

The seed production, as a result of using Packham's Triumph and Winter Nelis pollen, is disappointing, especially in view of the free production of fruit. In only two fruits were nine seeds collected, while in a number, two and three seeds only were carried.

The counts and results are set out in Table I.

That Packham's Triumph is a satisfactory pollinizer for Josephine has been demonstrated recently in the orchard of Mr. P. Val Kerr, of Tyabb. Over a period of eight years, four trees of Josephine gave a total yield of ten bushels, and during five individual years the

Josephine, selfed—1.7 % set.

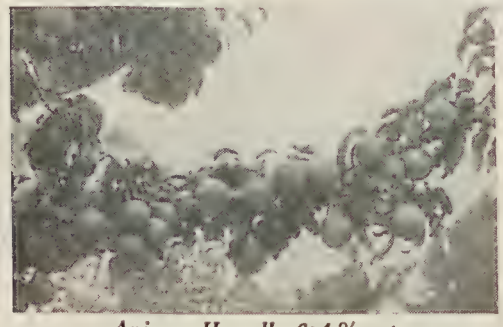
TABLE I.—POLLINATION OF JOSEPHINE PEARS.

Josephine Crossed with—	No. of Fruit Buds.	Approximate No. of Flowers.	Fruit. 1st Count, Nov. 5.	Fruit. 2nd Count, Dec. 7.	Fruit. 3rd Count, March 14.	Fruit Set Per Cent.	No. of Seeds.	Average Seed Content.
						%		%
Packham's Triumph ..	241	1,928	659	387	382	19.8	1,737	4.5
Winter Nelis	239	1,912	661	360	359	19.4	1,542	4.2
Winter Cole	244	1,952	564	268	263	13.4	1,048	3.9
Black Achan	269	2,152	245	69	68	3.1	86	1.1
Open	237	1,896	271	167	150	7·9	384	2·5
Selfed	218	1,744	86	31	30	1·7	29	0·9

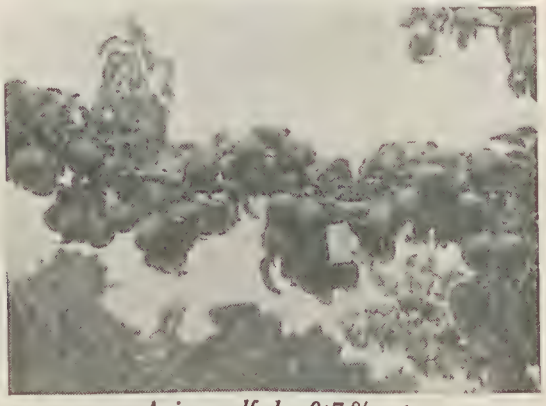
NOTE.—The final count was made on 14th March, 1935: there was an average of eight blossoms to the fruit bud: there were eight branches for each pollinizer.

Anjou x Keiffer—7·1 % set.

trees carried no crop. In the eighth year, one tree was cut back, and worked over to Packham's Triumph. The result was immediately successful. During the succeeding thirteen years, the *three* trees yielded a total of 203 bushels, an average of over 5 bushels per tree, as compared with an average of 0.3 bushels per tree during the pre-pollination period. This record of 5 bushels per tree would have been increased had the trees borne a normal crop over the whole period, but during the year of the thrips attack, they carried 2 bushels only. Omitting this year, the average yield would be 5.6 bushels per tree. These figures represent packed bushel cases, no allowance being made for drops, rejects, or any other oddments.



Anjou x Howell—6·4 % set.



Anjou, selfed —0·7 % set.

Beurre d'Anjou.

One row of this variety growing in the orchard of Mr. A. Tully, Doncaster, was selected for the test. On the west side of this row were placed three rows of Howell, and then two rows of Keiffer's Hybrid. On the east side were three rows of Beurre Bosc. A strong plantation of *Pinus insignis* is growing to the east and north of this row, and at right angles to it.

TABLE II.—POLLINATION OF BEURRE D'ANJOU PEARS.

Beurre d'Anjou Crossed with—	No. of Fruit Buds.	Approximate No. of Flowers.	Fruit. 1st Count, Oct. 22.	Fruit. 2nd Count, Dec. 7.	Fruit. 3rd Count, Feb. 3.	Fruit Set Per Cent.	No. of Seeds.	Average Seed Content.
						%		%
Keiffer's Hybrid	317	2,694	281	189	189	7·1	1,291	6·7
Howell	288	2,448	228	169	158	6·4	768	4·8
Monchallard	87	737	59	46	40	5·4	253	6·3
Harrington	312	2,654	236	127	113	4·2	592	5·2
Open	334	2,839	345	233	215	7·5	1,291	6·0
Selfed	367	3,119	101	34	24	0·7	7	0·3

Pollen of Howell, Keiffer's Hybrid, Harrington, and Monchallard pears was selected for the work. Owing to the short supply of pollen, and the rainy season, the latter two varieties were used for one crossing only. Howell pollen was used once, and twice; and Keiffer's Hybrid pollen was used twice and three times. Early Howell blooms only are available to catch the late blooms of Beurre d'Anjou, hence only one crossing was possible.

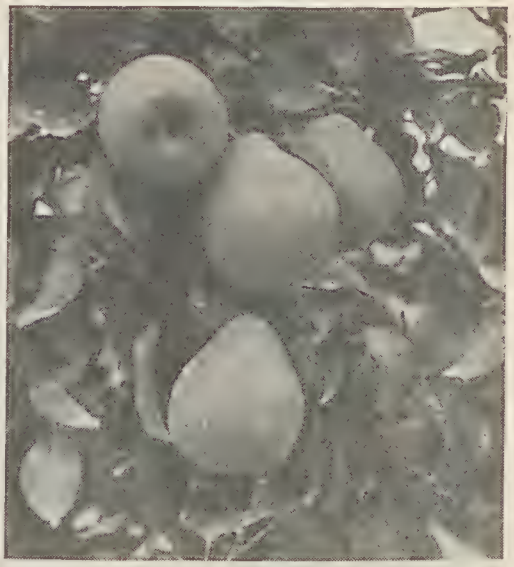
The counts and results of this trial are set out in Table II.

It is interesting to note that in this work the highest result has been obtained on the "open" branches. This is due to the fact that the adjacent orchard rows are composed of Keiffer's Hybrid and Howell, the two varieties which gave relatively high results in the cross pollination work. It is thus shown that the actual orchard experience bears out the experimental work. Monchallard pollen was used because of its synchronous blooming; but it is recognized generally as being valuable to Keiffer's Hybrid for fruit setting. This applies to Harrington also.

Anjou, open—7·5 % set.

Doyenne du Comice.

This is one of the most popular varieties of pears, being both luscious and well flavoured. It is attractive to the orchardist on account of the high prices regularly received on the London market. It has been a very popular pear in England for nearly a century. It is recorded there as being a "certain cropper, of beautiful growth, and surpassing flavour."



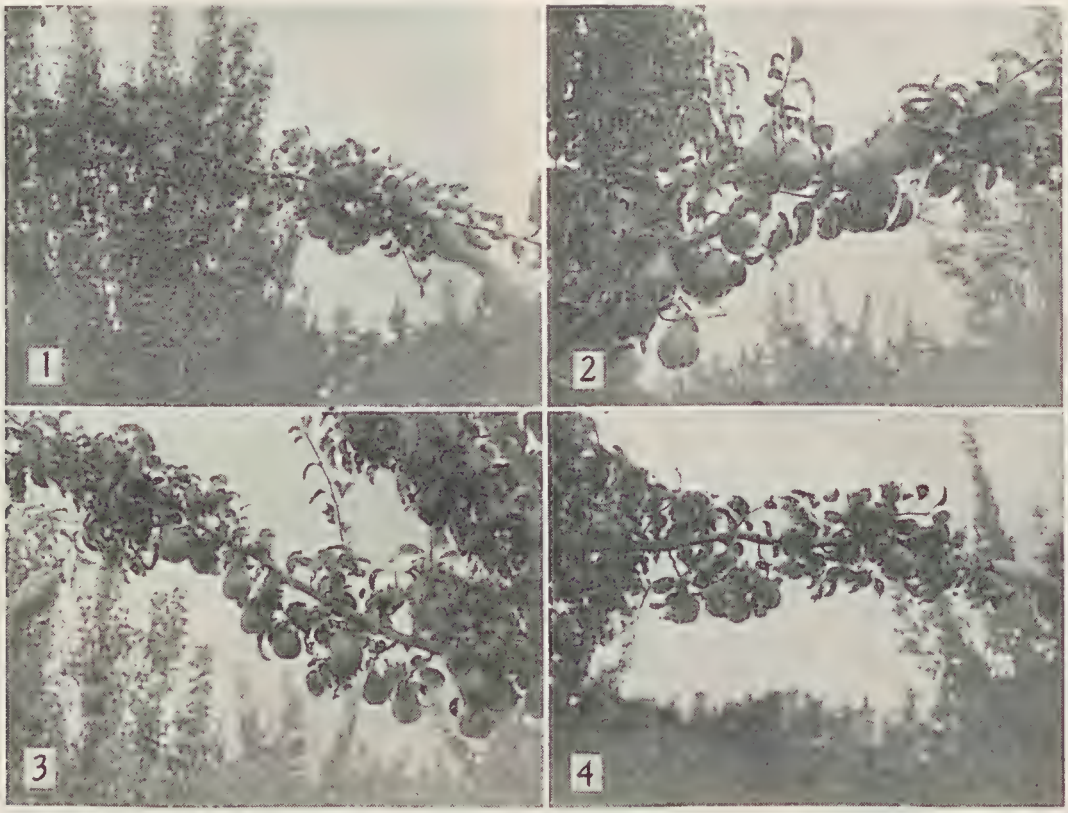
Doyenne du Comice pears.

Unfortunately, in Australia, it is quite the reverse of a "certain cropper," and has become a problem to orchardists, who desire to grow it because of its popularity.

There are several problems in regard to the culture of this pear; and it is by no means certain that the lack of a suitable pollinizer is the only factor influencing its low cropping performances. For instance, the anthers burst before the flower buds open, so that much of the pollen may be lost. Further, the petals are very easily damaged, and the flower stem is exceedingly weak. It can thus be seen that a severe windstorm during the blossom period would cause a very heavy loss. This actually happened in the present experiment on 27th September, when the trees were in full bloom, and much blossom was lost or injured.

In the orchard of Mr. W. Lipscombe, of Croydon, there is a group of 104 Comice pears which were planted in 1915. Since 1930, the trees have not averaged half a bushel per tree. On the west side of these trees are two rows of Winter Cole pears, followed by two rows of Williams. On the east side are two rows of Beurre Bosc.

It was decided to test the pollen of Williams' Bon Chretien, Winter Nelis, Winter Cole, and Josephine, twelve trees being selected, with four branches on each, including the "open" and "selfed" branches. Two and three hand



1. Comice x Josephine—5 % set; 2, Comice x Williams' Bon Chretien—4·08 % set; 3, Comice x Winter Nelis—3·5 % set; 4, Comice, open—3·04 % set.

pollinations were given, according to the supply of pollen available, and the counts are set out in Table III.

A comparison of the figures obtained for seed content indicates that Doyenne du Comice carried more seeds than the other two varieties tested this year.

It would seem that two suitable pollinizers would be Josephine de Malines, and Williams' Bon Chrètien, but these are the results of one year's work only, and must not be taken as final. This is important, in view of the fact that it is only possible to use the early flowers of the Williams' to pollinate the late blooms

TABLE III.—POLLINATION OF DOYENNE DU COMICE PEARS.

Doyenne du Comice Crossed with—	No. of Fruit Buds.	Approximate No. of Flowers.	Fruit.			Fruit Set Per Cent.	No. of Seeds.	Average Seed Content.
			1st Count, Nov. 5.	2nd Count, Dec. 7.	3rd Count, Feb. 27.			
						%		%
Josephine	231	1,617	101	84	81	5·0	495	6·1
Williams' Bon Chretien ..	231	1,617	90	67	66	4·08	392	5·9
Winter Nelis	244	1,708	87	68	61	3·5	358	5·8
Winter Cole	212	1,484	75	49	47	3·1	308	6·5
Open	249	1,743	87	53	53	3·04	314	5·9
Selfed	199	1,393	18	8	6	0·4	15	2·5

[*Continued on page 280.*

Dehorning the Dairy Herd

A Desirable Practice

By J. Robertson, Dairy Supervisor

SINCE most of the lower animals appear to have some means of defending themselves, some people argue that the dehorning of cows is a cruel practice. However, the conditions existing when cattle roamed in a wild state, and horns were necessary for defence or attack, are entirely different from those under which domestic cattle are kept. Indeed there can be no reasonable comparison between the herd of wild cattle roaming where it will, and the highly developed modern dairy herd.

When cows are in the milking yard, and when they are grazing in small enclosures, the weaker animals are very liable to attack by the stronger. Sometimes in an attempt to defend itself in an open encounter, a cow may lose the shell of a horn, leaving exposed a tender core that has to be nursed for several weeks. Every supervisor when examining dairy herds has seen the ravages of some bad-tempered "boss" cow. Torn flanks, ripped and ruined udders are not uncommon, and it is the timid, highly strung, high-producing animals that are the chief victims. Much of this cruelty and consequent loss might be lessened if larger yards were provided, but it could be prevented altogether by the dehorning of the whole herd.

Dehorning of herds is recommended by the Department of Agriculture. Some of its advantages are:—Less daily disturbances and injuries among the herd; a smaller yard space is required which can be more easily constructed, paved, or improved; the stronger cow has less control at drinking troughs and feeding places in the paddocks, and thus water and feed can be utilized better by the herd; timidness is reduced to a minimum, as the cows are quieter in the yard. Any one who has seen timid cows, and heifers in particular, getting their daily gruelling, realizes the advantages of dehorning. With the "fighting gear" removed, cows become quieter, and the herd stands together like a small flock of sheep.

A docile and contented herd of Red Polls in a well-sheltered paddock.

A bump from a hornless head may hurt, but it rarely causes any serious harm. Feeding-time in the open is an anxious time for the timid cows, as they must always be on the lookout for the "bosses."

In bail-feeding less head room is required for hornless herds compared with that necessary for horned herds. Smaller feed-boxes will do, and they will certainly last longer when not shoved about by long, sharp horns. Horns may be useful to assist in determining the approximate age of a cow, but her usefulness as a producer is most authentically gauged by the scales and tester. Her value to the butcher is enhanced by the absence of scores and such injuries. When purchasing hides tanners allow a margin for losses on account of horn-marks; this practice considerably lowers the annual value of hides sold in the State.

Does dehorning hurt? Is it not cruel? These are common inquiries when the question of dehorning is discussed. Of course, there is some pain, but the operation can be described as cruel only when it is performed by one who does not understand the work. The law will be set in motion if any animal is cruelly treated. When dehorning is done by a competent man provided with proper equipment, the operation is performed expeditiously and without any great pain to the animal. It is quite common for cows immediately after being dehorned to start feeding. This is surely a sign that very little pain is suffered. The animal's welfare would be further studied if the work were done either in early spring or in late autumn when flies are less active.

Any slight decrease in yield in a few "moody" cows is soon balanced up by the herd generally. Provided they be easily persuaded into the bail, cows may be dehorned even when they are close to calving without any fear of ill effects. There may be a slight discharge from the wound, but this is the exception rather than the rule. Deaths following on dehorning are so rare as to be not worth considering. A slight loss of blood cannot be avoided; the quantity varies with the individual cow, and is minimized by quiet handling immediately before and after the operation.

Attractiveness in a cow lacking the horns characteristic of her breed may be lessened, but commercial dairymen requiring the last pound of production do not generally regard hornlessness as being in any way detrimental.

A serviceable dehorning bail.

A Dehorning Crush.

A suitable crush or dehorning bail will facilitate the work. The bail or combined crush and bail illustrated may also be used for such operations as drenching, speying, ear-marking, and firebranding. Some types of cow-shed are not suitable for these purposes. This combined crush and bail may be erected near the outlet from the shed or yard. The material used must be strong and substantial. Sawn hardwood 4 inches by 1½ inch should be used. The length of the bail is 7 feet; its height 6 ft. 6 in., and width 2 ft. 6 in. Four posts of 10 feet each are necessary, and they should be placed 3 ft. 6 in. in the ground. Sawn timber must be bolted together.

The right hand gate of the crush is 2 feet shorter than that on the left hand. The small gate when opened lends easy access to the crush from a corner of the receiving yard. The heavy top tie timber binds the whole structure securely. Controlled by one action the long iron latch keeps the gate fast at top and bottom. Connected by a light rope, and supported by two bolts, both bail tongues are closed simultaneously by an attendant at the small gate.

The crush may appear to be unnecessarily heavy, but this is a desirable qualification. It is essential for the operator to have free access to the base of the horns. Before commencing, he should feel confident that the beast is firmly secured. There must be ample room for the operator to control the shears without interference from the structure. A rope from the left-hand side of the crush, drawn around the animal's hindquarters, and made secure on the

Showing the side crush gate open. The method of release is shown on the left.

opposite side, is useful to prevent any "pulling back." As the blades should operate right up against the flesh the head must be kept clear of the bail structure to allow the blade holders sufficient clearance at the seat of the operation.

It is advisable to dehorn the dairy bull—irrespective of his pedigree or breeding—even though some system of control is in practice. Many dairy bulls thought to be quiet or harmless, have suddenly gored unsuspecting attendants. A valuable horse or pony may be a victim. Great damage can be done to property and fences where the horned bull runs at liberty, and may cause arguments between neighbours. Two adjustable "bail tongues" on the crush are advisable for bulls and thick-necked cows. The removal of the horns of the bulls calls for a special effort by the operator, as the base of their horns is usually very large and hard.

The cutting blades and handles of the machine are sometimes broken when dehorning bulls or coarse-horned cows. Strong pipes may be fitted into the handle sockets to secure added strength. Toughness can be imparted to the blades by placing the cutting ends in a clean vessel of hot water prior to the operation. The blades should have a keen, even cutting edge, and be firmly screwed to the holders. Some disinfectant must be placed in the water. As an added precaution to safeguard the wound, an antiseptic wash may be painted around the base of each horn before cutting. The horn should be cut as near the base as possible so as to avoid leaving any stump on the head, although naturally in this way a larger cavity is exposed. Parts of the horn core occasionally drop into the cavity and must be immediately removed; a wire loop should be kept in the disinfectant vessel for this purpose. Wads are obtainable for placing over the exposed cavities.

Many operators favour smearing Stockholm tar on the wound if flies are troublesome. Actually very little can be placed on the wound, and the tar is inclined to "run," and may appear unsightly on the animal's head. When bleeding ceases the dressing can be more effectively applied. If the work be skilfully done in dull weather and with the wounds protected from flies, nature soon renders all the healing assistance necessary.

The cost of a dehorning instrument could be borne by several neighbours. Quite a number of Herd Testing Associations now own a suitable instrument. In some instances its use is

The animal's head is controlled by "bull grips" in the nose.

free to members; in others a small charge is made. The Winchelsea Association herd testers have purchased a dehorner, and find it a profitable sideline. The usual charge is 6d. per cow; for bulls about 10s. each. Over 1,000 cows and 50 bulls have been dehorned in the Winchelsea area during the last three years, and thousands of dehorned cows, grades and pure-bred, representing all breeds, are to be seen in the main dairying areas.

Breeding for Hornlessness.

Hornlessness can, of course, be bred into a herd, or a breed. The Americans have thousands of pure-bred polled Herefords and Shorthorns. They are now working on similar lines amongst the dairy breeds of cattle. If

a pure-bred polled sire is used, his progeny will all be hornless. The polled character is dominant over the horned character. Red Poll cattle have many advocates in Victoria, but Polled Hereford and Polled Angas bulls do not attract many of our dairy farmers. If a hornless herd is desired quickly, it is necessary to dehorn the several members of it.

It would be difficult to estimate the losses caused annually by horned animals.

Calves from any herd may be treated with some caustic preparation, so that the horn buds will be destroyed. A Yarragon dairyman dehorns his calves with a heated rifle barrel end, and claims that there has not been a single failure with the method. The young horn-bud can also be quickly removed by means of a sharp knife. Any method of calf dehorning is most successfully accomplished when calves are two days old. If not treated when very young they should not be dehorned till they are about 20 months old, otherwise they may grow short, unsightly "stubbs" or horn-butts.

Pollination of Pears

Results of 1934 Tests

(*Continued from page 276.*)

of Comice. Thus a result may prove satisfactory from an experimental stand-point, but not from a practical one.

It is a general practice to interplant Winter Nelis with this variety for pollination purposes, and growers usually have relied upon this cross to give results. In California, Tufts and Philp (Univ. Cal. Berk. Bull. 373, Sept., 1925, p. 20) record under coastal conditions a total set of 29.9 per cent. as a result of crossing Comice with Winter Nelis, as compared with a normal set of 4 per cent. But a result of 3.5 per cent. this season, using this cross, is not altogether conclusive, and further experiments are required before a satisfactory conclusion can be reached.

In view of the possibility that the low cropping character of this variety is due to more than one factor, three other phases are being studied in Mr. Lipscombe's orchard. Two methods of cincturing are being tested, one by cutting out a thin ring of bark on several branches, and another by twitching a wire around other branches to cause a check in the sap flow. In addition, several trees have been fastened to wires, so that the branches are trained to grow in a horizontal direction in the same way that Keiffer's Hybrid usually is grown. As yet, no records of these tests are available.

Messrs. Lipscombe, Tully, and Kerr are thanked for their co-operation in this work.

ERRATA.

The following information was omitted from an article on the Vegetable Weevil, which appeared in the August, 1934, issue of this *Journal*:—

After Figs. 2, 3, 4, 5, and 6 add "After Essig.".

REFERENCES:—1. Lovell, D. H.—*Calif. Bull.* 546.
2. Muggeridge, J.—*Jour. N.Z. Dept. Agric.*, 47, p. 221.
3. Morgan, W. L.—*Agric. Gaz. of N.S.Wales*, 42, p. 610.

Phylloxera-Resistant Vine Stocks

Including Some Recent Introductions

By F. de Castella, Viticulturist.

WHEN Phylloxera was found in Rutherglen, in 1899, the futility of the "extinction" control method, attempted with earlier outbreaks, was tardily realized, and attention was turned to the Resistant Stock. Here, as elsewhere, this admittedly indirect solution of the problem proved a gratifying success. The majority of the destroyed vineyards have been replanted with vines grafted on roots that have nothing to fear from the insect. The stocks used were those that had proved their value in France early in the century, when our own reconstitution had to be undertaken. With the exception of a few that are better suited to climates cooler than ours, they have proved well adapted to Australian conditions. Within the past two decades, however, several newer vines have proved their value, and in some cases at least, are superseding the older ones. These were not within the domain of viticultural practice in 1908, when the writer was entrusted with a "viticultural mission" to France; some were, it is true, showing promise, but their value had not been sufficiently proved to justify the responsibility of recommending them for general use. Since then, much additional evidence has been forthcoming, confirming the hopeful expectations of a few years back, and making these newer stocks worthy of serious attention by intending planters. It is in the very desirable direction of quality of the wine that several of these show marked improvement.

The Older Stocks.

For the information of those unfamiliar with the question, the need for the resistant stock may be briefly explained. Phylloxera is a minute root insect belonging to the Aphis group, fatal to European vines, but doing little or no harm to the wild American vines that have co-existed with it in the native habitat of both since time immemorial. It was unwittingly introduced into Europe in the second half of the nineteenth century; in view of the enormous economic importance of the wine industry, the devastation of the vineyards that followed constituted a veritable disaster.

After protracted investigation, the solution of the problem was found to be the grafting of the European vines, which all belong to the one species, *Vitis vinifera,* on to the resistant root system of the wild American vine. The old vines are thus able to live with, and in spite of, phylloxera. The American vines are resistant, but not immune; the insect can live on their roots, usually in small numbers, but without injuring them.

Phylloxera is spreading steadily; it has already invaded all vine-growing countries. Though large regions are still clean, such for example as the States of South Australia and Western Australia, and considerable areas in the other three States, it must inevitably spread to every corner of the globe; and even in districts still considered free from the pest, a time must come when the appearance of this insect will compel the adoption of the resistant stock if grapes are still to be produced.

Its practical use is not, however, so simple a matter as might appear. There are a great many different stocks, each with its individual requirements in the way of climate and soil (adaptation), and also of European vine sort that it may be desired to graft on to it (affinity).

Twenty distinct vine species grow wild in North America, eighteen of which belong to the Euvitis, or true vine section. Cross-fertilization takes place freely between several of these, resulting in a number of wild or natural hybrids. Since reconstitution, deliberate crossing has resulted in the raising of a vast number of artificial hybrids, so that to-day there is an enormous choice of stocks.

The old vines of Europe were very easy to please in the matter of soil, but the American vines are far less accommodating, each one demanding special conditions for satisfactory results. Lime intolerance is shown by many of them in calcareous soils, where they succumb to chlorosis, a disease previously unknown with Viniferas on their own roots.

V. Riparia and V. Rupestris.

The first real success of the grafted vine in France was with the Riparia stock. Cuttings from wild vines in the woods bordering the Missouri River proved far superior to stocks tried previously, and this vine soon became immensely popular. It presents several important advantages; its cuttings strike very readily, grow rapidly, are easily grafted, and confer marked fruitfulness to their scions, also hastening the ripening of the grapes.

Unfortunately, these are off-set by serious defects. It is essentially a cool-climate vine, out of place in a warm dry region, and it imperatively demands rich soil. As its common name, "Riverside grape," would indicate, it thrives only on soil that is rich, deep, and mellow, with sufficient moisture, yet well drained, and of low lime content, as it is liable to chlorosis. Soils that fill these conditions are often classed in France as "Riparia soils."

Of the many selections from the wild vines extensively grown 40 years ago under such names as *Riparia Portalis, R. Grand Glabre, R. Scribner,* &c., the first-named, which is far superior to all the others, alone survived the test of time. Better known by the name of *Riparia Gloire de Montpellier,* or more simply as *Riparia Gloire,* it is the only pure Riparia still used, and only on typical "Riparia soils."

Riparia Gloire, which was the most successful selection from the old vines. [After Mazade].

Riparia Grand Glabre, an early selection from the wild vines of America. A typical Riparia leaf. (Five-twelfths natural size).

In France, after Riparia, came Rupestris, which, being the "Rock Grape," was held to be everything that Riparia was not. A measure of drought resistance was even claimed for it; this has not been justified by results. It certainly stands heat better than does Riparia, provided its plunging roots can reach a moderately moist zone, otherwise it may suffer from drought as much as Riparia.

The great virtue of Rupestris is its "rusticity," to borrow a French term; provided its roots are able to plunge, it will thrive on very poor land that would be quite hopeless for Riparia. It is the ideal stock for poor soil, provided the subsoil be penetrable. It is, indeed, unsuitable for rich land, on which it tends to excessive growth, which may be at the expense of yield, especially with scion sorts liable to coulure.

Most pure Rupestris are as intolerant of lime as is Riparia, but the selection known as Rupestris du Lot is an exception, thriving in soils containing up to 25 per cent. calcium carbonate.

This is the best of all the Rupestris selections, and the only one now planted. In some regions it is preferred to any other stock, notwithstanding its frequent suckering. Formerly,

Rupestris du Lot is the only pure Riparia now used. (Half natural size).

several other selections were in general use, such as *Rupestris Martin, R. Ganzin, R. Metallica,* &c., but *R. du Lot* has superseded them all.

Hybrid Stocks.

To-day the majority of stocks in use are hybrid vines. In the early days of reconstitution, Riparia came to be accepted as the stock for rich, and Rupestris for poor, land, provided, in both cases, that the lime content was low; but it soon became evident that these are extreme cases, and between these limits are the great majority of vineyard soils. For these, better stocks than either of the pure species were found in hybrid vines, obtained by crossing two pure American species, or one American with *Vitis vinifera.* In addition to binary crosses, where only two species are concerned, there are ternary and more complex hybrids among the stocks of value. In the designation indicating their hybrid origin, it is customary to mention the pollen parent after the fruit-bearing one. For example, the term *Riparia* x *Rupestris* would signify a vine raised from a seed borne by *V. Riparia* that had been fertilized with *V. Rupestris* pollen. In vine breeding, the male parent is usually prepotent, though there are exceptions to this rule.

Among earlier hybrids the *Riparia* x *Rupestris* group soon came into prominence. They are stocks of undoubted merit that still occupy a foremost place; they combine the qualities of both parents and eliminate most of their defects. Curiously enough, hybrids sometimes have qualities not possessed by either parent. The *Riparia* x *Rupestris,* for example, show more lime tolerance than do either species in the pure state. In the majority of vineyard soils of medium fertility and not excessive lime content, they give excellent results. The best known are Nos. 3309, 3306, and 101-14. Of these the first named inclines more towards the Rupestris parent, in appearance and aptitude, whilst the last named takes more after Riparia; No. 3306 is intermediate.

Another important group is the *Vinifera-Americans,* or Franco-Americans, as they are also called; these are crosses between European vine sorts and an American species. Though lessened phylloxera resistance is to be expected from such breeding, curious freaks often occur

Riparia x Rupestris hybrid No. 3309, a successful stock in Victorian reconstitution. (Half natural size).

in hybridization, a few individual seedlings inheriting almost in its entirety a character of one parent. The best stocks in this group have, in this way, inherited considerable resistance. If not equal to that of the pure American, it is practically sufficient in very many

cases. It is true that disquieting reports of failure under phylloxera attack, in Southern Europe, California, and the Cape, have appeared from time to time. Such cases occur mainly on dry calcareous land where phylloxera is most deadly. Though the liability to attack cannot be disregarded, stocks of this group are still popular and extensively planted in soil that is not too "phylloxerating," to use a French term. The best known are the two *Vinifera* x *Rupestris* known as A.R. G.1 and No. 1202. The first is a cross between *Aramon* and *Rupestris Ganzin.* The second is a seedling of *Mourvèdre* (*Mataro*) pollinated by Rupestris. These vines are well known in Victoria.

Several *Vinifera* x *Berlandieri* hybrids are extensively planted in Europe, especially on difficult calcareous soils, for they are highly lime tolerant; chief among these are No. 41B, *Chasselas* x *Berlandieri* and No. 333, *Cabernet* x *Berlandieri.* The first named is grown to a limited extent in Victoria.

Other American Species.

At first, *V. Riparia* and *V. Rupestris,* either in pure or hybrid form, monopolized attention to the exclusion of other species, though some of them have characteristics of very real value. Foremost amongst these are *V. Berlandieri* and *V. Cordifolia,* and, to a somewhat lesser extent, *V. Monticola, V. Cinerea, V. Candicans, V. Aestivalis, V. Luicecumii,* &c.

These are all warm climate vines, that grow wild in the southern States of the United States of America, and as such should be better suited to Australian than to French conditions. The climate of France is cooler than ours, and except in the milder southern Departments, the wood of these vines often fails to ripen properly.

A defect common to all these species, and the main cause of early neglect, is the great difficulty in striking their cuttings. This has been much attenuated by hybridization; though seldom used in the pure form, some of these species have played an important part in the breeding of hybrid stocks that have only recently become popular owing to such attributes as drought resistance, fitness for soils that present adaptation difficulties owing to high lime content or some other undesirable feature, affinity for difficult scion sorts, or quality of fruit yielded by vines grafted on them. Thus *V. Berlandieri* and *V. Monticola* are natives of the driest and hottest part of Texas, growing wild on very limy, chalky soils. *V. Cordifolia* is very drought-resistant, and thrives in hard, dry, silty soil, though it does not tolerate lime. *V. Cinerea* does well in stiff clay, often under swampy conditions, though it can also stand drought. These attributes can more conveniently be considered in connexion with the hybrids derived from each species.

No. 3306, another successful Riparia x Rupestris hybrid. (Half natural size).

Victorian Reconstitution.

Our north eastern vineyards were mainly replanted between 1910 and 1920, the stocks used being those most popular in France at that time. Five of these constitute the basis of our reconstitution; these are *Rupestris du Lot,* the *Riparia* x *Rupestris* hybrids Nos. 3306 and 3309, and the *Vinifera Rupestris* Hybrids A.R.G.1 and No. 1202. These are so well known that further details concerning them are here unnecessary.

Riparia Gloire was discarded at an early date, mainly on the writer's advice, on his return in 1908, from the mission to France, as referred to previously. This stock has several excellent features, but they are offset by serious defects. It is a cool climate vine and scarcely suited to our warmer conditions. The rich moist soils it demands are the exception here, and there are other stocks that possess its qualities, in equal measure, whilst free from its defects.

Though still popular with some table-grape growers near Sydney, who are attracted by the early ripening fruit of Snow's Muscat, grafted on it, we have no reason to regret the abandonment of this stock.

Another stock that did not fulfil our early expectations of it is No. 101-14, a *Riparia* x *Rupestris* hybrid of similar breeding to 3306 and 3309, but generally inferior to them, in the opinion of our practical growers, though it seems to give satisfaction in California and South Africa. It is noteworthy that of these three hybrids, 101-14 is the one that most inclines to the Riparia parent; further evidence of the unsuitableness of V. Riparia for our warm conditions.

The five stocks mentioned above, as the basis of our reconstitution, have on the whole given general satisfaction. Though some have proved superior to others for certain soils and scion sorts, difficult problems in the way of adaptation have been of rare occurrence. It is true that most vineyard soils in Rutherglen and the surrounding districts, are of "easy" types, very suitable for the resistant stocks. We have been spared the chlorosis problem by their low lime content. This grave disorder, that proved so disconcerting in many parts of France and Algeria, before the introduction of modern lime-tolerant stocks, is unknown in our north-east. Some soil problems there certainly are—such as stiff clays and fine silts, that set hard when dry. It is noteworthy that insufficient phylloxera resistance of the *Vinifera* x *Rupestris* stocks, referred to above, has not yet been observed in our vineyards; they are still very popular here. They have been planted on all types of soil, including dry hillsides, but in no cases has any weakening, due to phylloxera attack, manifested itself.

A.R.G.1, the successful Vinifera Rupestris hybrid.
(Half natural size).

Taken as a whole, a very gratifying measure of success has been achieved with our five leading stocks. So satisfied are many growers with these that they see little justification for the quest after "something better." It is nevertheless obvious that if anything really better exists, it is in the growers' interest to avail himself of it for vineyard extension or replacement. Any increase in quantity or quality is well worth while; even if slight, it is repeated year after year. The best possible stock must be our aim; it costs no more to grow and its advantages are clear profit. Improvement in wine quality is in itself an important recommendation. The "good enough" attitude is illogical, and it is now being discarded by French and Algerian growers. Whilst older favorites are still considered good, some of the newcomers are, in certain circumstances at least, even better, and are steadily displacing them. The purpose of the present article is to describe some of these newer stocks and the reasons for their superiority.

The Newer Sorts.

Though the stocks about to be described are little known in Australia, they are scarcely new vines; most of them were raised towards the close of last century, during the great quest after the perfect stock in France. Their tardily recognized merits were at first eclipsed by other vines, more spectacular perhaps by their vegetative growth, but in reality of lesser value. Whilst vigour is in the main desirable, it may, in excess, be at the expense of other qualifications, such as setting of the blossom, quality of product, &c.

The stocks about to be described can be conveniently divided into several groups according to the pure American species concerned in its breeding that has had an important influence on its aptitudes and requirements from a practical viticultural stand-point. We thus have a group of Berlandieri hybrids.

another of Cordifolia hybrids, and others connected with *V. Monticola, V. Cinera, V. Lincecumii,* and so forth.

Berlandieri Hybrids.

In its pure form, *V. Berlandieri* is a remarkable species. It was altogether neglected in the early days of reconstitution, owing to its seemingly poor growth, and first came into prominence as a result of the mission to America of Professor Viala, whither he was sent by the French Government to seek for a lime-tolerant stock suited to the very calcareous soils, frequent in France, in which the American vines, hitherto tried, succumbed to chlorosis. He found *V. Berlandieri* growing wild on chalky soils in Texas, and his opinion as to its value has been fully confirmed in France, where, either in pure or hybrid form, it has rendered possible the reconstitution of difficult calcareous soils.

This species has another quality, of special interest in Australia, for it is one of the most drought resistant of vines, a quality it shares with *V. Monticola.* The two grow wild on poor land in the hottest and driest parts of Texas among cacti and live oak (*Quercus virens*).

Vitis Berlandieri has, in addition, other qualities of very real value. It is very easy to graft, and possesses great affinity for most Vinifera sorts, to which it communicates marked fruitfulness, countering coulure with sorts that set badly at blossom. A most precious characteristic is its happy influence on the quality of the wine, that is also shared by its hybrids. The Riparia stock promotes quality by advancing the date of ripening, but the action of *V. Berlandieri* in this direction is of a different order. It seems to also promote such somewhat intangible characteristics as the proper balancing of constituents and aptness to improve with age, that are summarized in the word "quality." The action seems to result from an extended ripening period; growth does not cease abruptly as is the case on Riparia stock. So important are these advantages as to make it highly probable that Berlandieri would have supplied the desideratum of the perfect all-round stock, superseding all others, were it not for two rather serious defects. Its cuttings strike with great difficulty, and its growth is slow during the first few years. It is the latter fault that led to the idea, referred to previously, that it is a poor grower. It soon acquires strength, and though not reaching the dimension of some other American species, becomes a strong vine, with a fairly stout stem. In the wild state it often climbs medium-sized trees. It presents the peculiarity of making much more growth below ground than above it. When grafted with the quicker-growing European scion, this is corrected, the upper part developing normally and in proportion to the strong root system, but the young vine is seldom fit to graft before at least two years old.

Vitis Berlandieri. (Three-eighths natural size).

Its roots are thick and fleshy, of greyish colour, and not much branched; they constitute a powerful and rather plunging system. The resistance to Phylloxera is very good (17 on V. and R. Scale), though not quite equal to that of Riparia and Rupestris (18).

Some commercial vineyards have been established in France on pure Berlandieri stock. They are altogether satisfactory, especially as regards yield, quality, and longevity. To quote Munson, "as a stock to succeed in very dry calcareous soils, resist Phylloxera, and live to a great age, we probably have no better species in the United States, but it has one generally serious fault—the difficulty of propagation from cuttings."

It is this last that has chiefly discouraged its use. Layering is too cumbersome, and the insignificant strike by ordinary nursery methods make the rootlings very costly. It may be somewhat improved by "taking" cuttings very early (before leaf fall) or very late (after

sprouting). Nevertheless, the establishment of a vineyard on this stock is expensive, and it takes rather long to reach full production.

Hybridization has largely overcome these defects, and by crossing it with other species, seedlings have been raised that inherit the striking qualities of this remarkable vine, whilst its defects are much mitigated. They retain the remarkable lime tolerance, drought resistance, scion fruitfulness, and longevity of *V. Berlandieri,* whilst its faulty striking and slow early growth are largely corrected. Their high grafting aptitude makes them admirable stocks for field grafting, ensuring rapid knitting and lasting unions. Unfortunately, they are much less suitable for bench grafting, giving a poor percentage of success when propagated in this way. This is not due to lack of affinity or any similar defect, but entirely to the slow root development inherited from the Berlandieri parent. Though corrected sufficiently for the commercial raising of ungrafted rootlings, it is still sufficiently marked to seriously hamper bench grafting. On removal from the callusing boxes, after two or three weeks in artificial heat, the perfection of the unions is remarkable, and success seems assured. Trouble starts only after planting out in the nursery. The scions soon sprout, exhausting available reserves, before roots appear; and most of the grafts fail. It is indeed this poor success with bench grafting that is mainly responsible for the little use that has been made of these valuable stocks in Victorian vineyards.

The Berlandieri hybrids include several stocks that have of recent years steadily increased in popularity, and rank to-day among the best. They comprise several sub-groups according to the other species crossed with Berlandieri. We thus have hybrids of *Berlandieri* and *Riparia,* of *Berlandieri* and *Rupestris,* of *Berlandieri* and *Vinifera,* as well as a few of more complex breeding.

Hybrids of V. Berlandieri and V. Riparia.

These are not found in the wild state, as the two species have different habitats, but several artificial hybrids have been raised. The influence of Riparia coming from a cool climate makes available the lime tolerance of *V. Berlandieri* in regions too cool for it in the pure state. This influence might be expected to also impair drought-resistance, but some of these hybrids retain this precious quality of Berlandieri in a high degree. The primary object of crossing the two species was the correction of difficult root formation. Selection eliminated those individual seedlings in which Riparia dominated, only retaining those showing marked Berlandieri affiliation. They are remarkable for vigour, affinity, easy grafting, and for maintaining and even improving the quality of the wine. Cuttings strike fairly easily, but not nearly so freely as those of Riparia, Rupestris, or their hybrids. Though less lime-tolerant than some pure Berlandieris, they thrive in soils containing up to 35 per cent. of lime carbonate in chalky form. "In such soils, *Riparia-Berlandieri* constitute, in our opinion, the best stocks at present known. Their vigour and drought-resistance, the productiveness they give the scion, the perfect ripening of the fruit . . . . give them also very great value for most soils, even if not calcareous, provided they are not damp; most *Riparia-Berlandieri* fear excessive moisture and even 'cool' soils. In dry soils they are destined to play an increasingly important part owing to the essential qualities they derive from Berlandieri."* This opinion, expressed in 1910, has been amply confirmed by vineyard practice in many countries. These hybrids include some of the most valuable stocks at the present day. The best known are the *Berlandieri* x *Riparia* hybrids, Nos. 420A, 34E, and 157-11, and the Riparia x Berlandieri hybrid No. 161-49.

No. 420A: *Berlandieri* x *Riparia*—Raised by Millardet and de Grasset in 1887. Some doubt seems to exist as to its exact parentage. According to Millardet, it is a seedling of a very vigorous Berlandieri selection, pollinated by a remarkable Riparia, with dark-green, much-lobed leaves.† Ravaz states that the pollen parent was probably *Riparia Gloire.* In 1889, 26 of the seedlings were planted on land where vines dying from phylloxera had just been uprooted. Its value was first recognized about 1899, and has since been abundantly confirmed in all vine-growing regions. No. 420A is the most vigorous of the *Berlandieri* x *Riparia.* Its numerous stout canes ensure a high yield of cuttings. Its appearance is striking; the glossy, very dark-green, leaves are of elegant and characteristic shape that recall the Berlandieri parent, though its growth habit

* *Ampelographie*—article by Viala and Péchoutre, Vol. I., p. 453.

† *Revue de Viticulture*, Vol. XII., p. 153. (5th August, 1899.)

No. 420A is a valuable and vigorous Berlandieri x Riparia hybrid stock. (One-third natural size).

is more like Riparia. It bears only staminate flowers. Its roots are numerous and somewhat fleshy, with high phylloxera resistance, though not quite equal to that of Riparia. Cuttings strike relatively easily, but root development is too slow for bench grafting. For field grafting, however, it is one of the best stocks, for it has good all-round affinity, and the graft knits very readily. It combines the best qualities of both parents without their defects. From Berlandieri it inherits lime-tolerance, a good measure of drought-resistance, and its favorable influence on quality and also on yield. It also inherits this parent's dislike for "wet feet," and should not be planted on land where drainage is faulty.

In our North-East it has been planted to some extent. In these vineyards (which are not irrigated) all who have tried it are well satisfied with results. On one of the largest vineyards it is preferred to other stocks. But for its unfitness for bench grafting, it would certainly be one of our most popular stocks. The only trouble experienced with it has, indeed, been due to one of its most desirable qualities, viz., its tendency to promote fruit production. Prolific bearers, grafted on it, and pruned in the usual way, may yield too freely and suffer subsequently from the usual ill effects of over-production. Judicious pruning easily corrects this tendency.

We have had no Victorian experience of this stock under irrigation. Unless good drainage be assured, it would seem to be contra-indicated; some of the other Berlandieri-Riparia hybrids that are more tolerant of moist conditions will probably prove superior in irrigated vineyards.

No. 34E: *Berlandieri* x *Riparia*—Selected from seedlings of *V. Berlandieri*, pollinated by *V. Riparia*, at the Montpellier School, by Foex and Viala in 1890. Two individuals were originally sent out: Nos. 33 and 34. The second of these proved the better, and is now the only one grown. No. 34E has all the main characteristics of No. 420A, but is easily distinguished by the tomentum on the young canes and leaf stalks. It tends more towards Riparia than Berlandieri, and the qualities inherited from the latter parent are not quite so marked. Its growth is not quite so strong, and it requires soil that is somewhat richer and not so dry; but it is rather more lime-tolerant. It grafts very readily, and promotes yield and quality, but its cuttings rooting less readily, it is even more unsuitable for bench grafting than the previous stock.

In our drier areas this stock seems to be scarcely the equal of 420A, but it may prove of

The Berlandieri x Riparia hybrid No. 34E. (Half natural size).

[*Continued on page 303.*

Stallion Parades

Time Table, 1935

Provided that the applications for registration received indicate that one horse or more will be in attendance there for examination, a parade will be held at each of the following places.

Horses submitted for examination must have had such training that the Examining Veterinary Officer may with safety handle their legs ; further, the legs of every animal should be in a thoroughly clean condition.

No. and Date.	Parade.	Time.	Officer Arrives.	Officer Departs.
Every Saturday from July 6 to December 21	Agricultural Offices	10 a.m.		
No. 1.				
Tuesday, July 2 ..	Jeparit Show Grounds	9 a.m. ..	7.7 p.m. (1st) ..	Driving
Tuesday, July 2 ..	Lorquon Railway Station ..	11 a.m. ..	Driving ..	Driving
Tuesday, July 2 ..	Netherby Railway Station ..	12 noon ..	Driving ..	Driving
Tuesday, July 2 ..	Yanac Railway Station	2.30 p.m. ..	Driving ..	Driving
Tuesday, July 2 ..	Broughton	4 p.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Kaniva Commercial Hotel ..	9 a.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Diapur and Nhill Roads Crossing	11.30 a.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Nhill Show Grounds	1.30 p.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Salisbury	3 p.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Gerang Gerung Railway Station ..	4 p.m. ..	Driving ..	Driving
Thursday, July 4 ..	Dimboola Show Grounds ..	9 a.m. ..	Driving ..	11.50 a.m.
No. 2.				
Monday, July 1 ..	Yarrawonga Shire Office ..	2 p.m. ..	1.55 p.m. ..	3.40 p.m.
Monday, July 1 ..	Goorambat Railway Station ..	5 p.m. ..	4.51 p.m. ..	8.13 p.m.
Tuesday, July 2 ..	Tungamah Railway Station ..	10 a.m. ..	8.57 p.m. (1st)	12.10 p.m.
Tuesday, July 2 ..	Benalla Railway Station ..	4 p.m. ..	3 p.m. or 3.55 p.m.	5.45 p.m.
Wednesday, July 3 ..	Euroa Railway Station	9 a.m. ..	6.26 p.m. (2nd)	11.1 a.m.
Wednesday, July 3 ..	Rutherglen Railway Station ..	2.10 p.m. ..	2.10 p.m. ..	2.10 p.m.
Wednesday, July 3 ..	Wahgunyah Railway Station ..	2.45 p.m. ..	2.45 p.m. ..	7.10 a.m. (4th)
Thursday, July 4 ..	Seymour Railway Station ..	10.30 a.m. ..	10.29 a.m. ..	12.17 p.m.
No. 3.				
Tuesday, July 2 ..	Sea Lake, Royal Hotel	9 a.m. ..	6.50 p.m. (1st)	Driving
Tuesday, July 2 ..	Nyarrin Railway Station ..	11 a.m. ..	Driving ..	Driving
Tuesday, July 2 ..	Nandaly Railway Station ..	12 noon ..	Driving ..	Driving
Tuesday, July 2 ..	Speed Railway Station	2.30 p.m. ..	Driving ..	Driving
Tuesday, July 2 ..	Lascelles Railway Station ..	4 p.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Woomelang Commercial Hotel ..	9 a.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Berriwillock Railway Station ..	12 noon ..	Driving ..	Driving
Wednesday, July 3 ..	Culgoa, Kaneira Hotel	2 p.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Warne Railway Station ..	2.30 p.m. ..	Driving ..	Driving
Wednesday, July 3 ..	Nullawil Railway Station ..	3 p.m. ..	Driving ..	Driving
Thursday, July 4 ..	Wycheproof Railway Station ..	10 a.m. ..	Driving ..	12.30 p.m.
No. 4.				
Monday, July 8 ..	Boort Railway Station	3.50 p.m. ..	3.50 p.m. ..	Driving
Tuesday, July 9 ..	Quambatook Hotel	9 a.m. ..	Driving ..	Driving
Tuesday, July 9 ..	Gredgwin Railway Station ..	11 a.m. ..	Driving ..	12.30 p.m.
Wednesday, July 10 ..	Charlton, Cricket Club Hotel ..	10 a.m. ..	3.42 p.m. (9th) ..	1.24 p.m.
Wednesday, July 10 ..	Korongvale Railway Station ..	2.40 p.m. ..	2.40 p.m. ..	3.15 p.m.
Wednesday, July 10 ..	Inglewood Railway Station ..	4.7 p.m. ..	4.7 p.m. ..	1.29 p.m. (11th)
Thursday, July 11 ..	Serpentine	10 a.m. ..	Driving ..	Driving
Thursday, July 11 ..	Wedderburn Railway Station ..	2.30 p.m. ..	2.30 p.m. ..	3.5 p.m.

STALLION PARADES, TIME TABLE—*continued.*

No. and Date.	Parade.	Time.	Officer Arrives.	Officer Departs.
No. 5.				
Monday, July 8	Maryborough Railway Station	1 p.m.	12.35 p.m.	11.11 p.m.
Monday, July 8	Avoca Railway Station	3 p.m.	Driving	Driving
Tuesday, July 9	Mildura Railway Station	9 a.m.	7.15 a.m.	Driving
Tuesday, July 9	Carwarp Railway Station	10.30 a.m.	Driving	Driving
Tuesday, July 9	Nowingi Railway Station	11 a.m.	Driving	Driving
Tuesday, July 9	Hattah-road Junction	12 noon	Driving	Driving
Tuesday, July 9	Trinita Railway Station	12.30 p.m.	Driving	Driving
Tuesday, July 9	Ouyen Show Grounds	2 p.m.	Driving	Driving
Tuesday, July 9	Galah Railway Station	3.30 p.m.	Driving	Driving
Tuesday, July 9	Walpeup Railway Station	4.15 p.m.	Driving	Driving
Wednesday, July 10	Torrita Railway Station	9 a.m.	Driving	Driving
Wednesday, July 10	Underbool Railway Station	10 a.m.	Driving	Driving
Wednesday, July 10	Linga Railway Station	11 a.m.	Driving	Driving
Wednesday, July 10	Boinka Railway Station	11.45 a.m.	Driving	Driving
Wednesday, July 10	Tutye Railway Station	12.30 p.m.	Driving	Driving
Wednesday, July 10	Cowangie Railway Station	1 p.m.	Driving	Driving
Wednesday, July 10	Danyo Railway Station	1.40 p.m.	Driving	Driving
Wednesday, July 10	Murrayville Railway Station	3 p.m.	Driving	Driving
Wednesday, July 10	Carina Railway Station	3.45 p.m.	Driving	Driving
Wednesday, July 10	Panitya Railway Station	4.30 p.m.	Driving	Driving
Thursday, July 11	Morkalla Railway Station	12 noon	Driving	Driving
Thursday, July 11	Meringur Railway Station	1 p.m.	Driving	Driving
Thursday, July 11	Bambill Railway Station	2.15 p.m.	Driving	Driving
Thursday, July 11	Werrimul Railway Station	3 p.m.	Driving	Driving
Thursday, July 11	Murray Valley-road and Merrinee-road Junction	4 p.m.	Driving	Driving
Thursday, July 11	Murray Valley-road and Pirlta-road Junction	4.30 p.m.	Driving	Driving
Thursday, July 11	Murray Valley-road and Benetook-road Junction	5 pm.	Driving	Driving
No. 6.				
Tuesday, July 9	Natimuk Railway Station	10 a.m.	5.40 p.m. (8th)	11.30 a.m.
Tuesday, July 9	Gymbowen Railway Station	1 p.m.	1 p.m.	Driving
Tuesday, July 9	Goroke Railway Station	1.30 p.m.	Driving	5.15 p.m.
Tuesday, July 9	Edenhope Sale Yards	3 p.m.	Driving	Driving
Wednesday, July 10	Horsham, Young Bros.' Sale Yards	8 a.m.	8.30 p.m. (9th)	1.10 p.m. or 4 p.m.
Thursday, July 11	Ararat Railway Station	9 a.m.	3.55 p.m. or 8 p.m. (10th)	Driving
Thursday, July 11	Maroona Railway Station	10.30 a.m.	Driving	Driving
Thursday, July 11	Willaura Railway Station	11.30 a.m.	Driving	Driving
Thursday, July 11	Stawell Railway Station	2.20 p.m.	2.20 p.m.	Driving
Thursday, July 11	Glenorchy Railway Station	4 p.m.	Driving	Driving
No. 7.				
Monday, July 15	St. Arnaud Show Grounds	3 p.m.	2.53 p.m.	12.41 a.m. (16th)
Tuesday, July 16	Donald Railway Station	2 p.m.	1.25 a.m.	5.25 p.m.
Wednesday, July 17	Birchip, Shamrock Hotel	9 a.m.	7.5 p.m. (16th)	Driving
Wednesday, July 17	Watchem Hotel	11 a.m.	Driving	Driving
Wednesday, July 17	Curyo Railway Station	3 p.m.	Driving	Driving
No. 8.				
Monday, July 15	Murchison East Railway Station	10.35 a.m.	10.35 a.m.	10.50 a.m.
Monday, July 15	Rushworth Railway Station	2 p.m.	11.38 a.m.	5.20 p.m.
Tuesday, July 16	Tatura Show Grounds	9 a.m.	8 p.m. (15th)	11.31 a.m.
Tuesday, July 16	Kyabram Railway Station	12.3 p.m.	12.3 pm.	Driving
Tuesday, July 16	Tongala Hotel	2 p.m.	Driving	4.41 p.m.
Wednesday, July 17	Shepparton Show Grounds	10 a.m.	7.51 p.m. (16th)	Driving
Wednesday July 17	Pine Lodge Railway Station	11 a.m.	Driving	Driving

STALLION PARADES, TIME TABLE—*continued.*

No. and Date.	Parade.	Time.	Officer Arrives.	Officer Departs.
No. 8.—*continued.*				
Wednesday, July 17	Dookie Railway Station	12.40 p.m.	Driving	Driving
Wednesday, July 17	Katamatite Railway Station	2.5 p.m.	Driving	2.55 p.m.
Thursday, July 18	Nagambie Railway Station	9 a.m.	7.8 p.m. (17th)	10.11 a.m.
Thursday, July 18	Nathalia Railway Station	1.17 p.m.	1.17 p.m.	3.40 p.m.
Friday, July 19	Numurkah, Shamrock Hotel	10 a.m.	4.22 p.m. (18th)	12.33 p.m.
Friday, July 19	Strathmerton Railway Station	12.56 p.m.	12.56 p.m.	1.5 p.m.
Friday, July 19	Cobram Railway Station	1.50 p.m.	1.50 p.m.	3.30 p.m.
No. 9.				
Monday, July 15	Kerang, Kerang Hotel	3 p.m.	2.46 p.m.	Driving
Tuesday, July 16	Koondrook Hotel	11 a.m.	Driving	Driving
Wednesday, July 17	Nyah Railway Station	9.15 a.m.	Driving	Driving
Wednesday, July 17	Piangil Railway Station	10 a.m.	Driving	Driving
Wednesday, July 17	Kooloonong Railway Station	11.30 a.m.	Driving	Driving
Wednesday, July 17	Bannerton Railway Station	1.30 p.m.	Driving	Driving
Wednesday, July 17	Margooya Railway Station	1.45 p.m.	Driving	Driving
Wednesday, July 17	Annuello Railway Station	2 p.m.	Driving	Driving
Wednesday, July 17	Koimbo Railway Station	2.15 p.m.	Driving	Driving
Wednesday, July 17	Bolton Railway Station	2.30 p.m.	Driving	Driving
Wednesday, July 17	Manangatang Railway Station	4 p.m.	Driving	Driving
Thursday, July 18	Cocamba Railway Station	9 a.m.	Driving	Driving
Thursday, July 18	Chinkapook Railway Station	9.30 a.m.	Driving	Driving
Thursday, July 18	Chillingollah Railway Station	10 a.m.	Driving	Driving
Thursday, July 18	Waitchie Railway Station	10.30 a.m.	Driving	Driving
Thursday, July 18	Gowanford Railway Station	10.45 a.m.	Driving	Driving
Thursday, July 18	Ultima Railway Station	12.30 p.m.	Driving	Driving
Thursday, July 18	Lalbert Railway Station	2 p.m.	Driving	Driving
Thursday, July 18	Swan Hill Show Grounds	4.30 p.m.	Driving	7.55 a.m. (19th)
No. 10.				
Monday, July 22	Royal Show Grounds	9 a.m.		
Tuesday, July 23	Royal Show Grounds	9 a.m.		
No. 11.				
Monday, July 29	Murtoa Railway Station	3.35 p.m.	3.35 p.m.	Driving
Tuesday, July 30	Marnoo Railway Station	10 a.m.	Driving	Driving
Tuesday, July 30	Rupanyup Railway Station	12 noon	Driving	Driving
Tuesday, July 30	Minyip, Club Hotel	2 p.m.	Driving	4.34 p.m.
Wednesday, July 31	Patchewollock Railway Station	9 a.m.	Driving	Driving
Wednesday, July 31	Hopetoun Show Grounds	11 a.m.	Driving	Driving
Wednesday, July 31	Yaapeet Railway Station	2.30 p.m.	Driving	Driving
Wednesday, July 31	Rainbow, Commonwealth Hotel	3.30 p.m.	Driving	Driving
Wednesday, July 31	Kenmare	4.30 p.m.	Driving	Driving
Thursday, August 1	Beulah Show Grounds	9 a.m.	Driving	Driving
Thursday, August 1	Brim Railway Station	11.30 a.m.	Driving	Driving
Thursday, August 1	Warracknabeal Show Grounds	12.30 p.m.	Driving	1.50 p.m.
No. 12.				
Tuesday, July 30	Wodonga Railway Station	10 a.m.	3.40 p.m. (29th)	12.45 p.m.
Tuesday, July 30	Tallangatta Railway Station	2.25 p.m.	2.25 p.m.	Driving
Tuesday, July 30	Eskdale Hotel	3.30 p.m.	Driving	Driving
Wednesday, July 31	Corryong Court House Hotel	11.30 a.m.	Driving	Driving
Wednesday, July 31	Tintaldra	2 p.m.	Driving	Driving
Wednesday, July 31	Walwa, Walwa Hotel	3 p.m.	Driving	Driving
No. 13.				
Tuesday, July 30	Rochester Fire Station	10 a.m.	7.48 p.m. (29th)	1.18 p.m.
Tuesday, July 30	Echuca Railway Station	1.50 p.m.	1.50 p.m.	3.30 p.m.
Wednesday, July 31	Elmore, Mitchie-street	10.30 a.m.	4.40 p.m. (30th)	1.10 p.m.
Wednesday, July 31	Cohuna Show Grounds	3.40 p.m.	3.40 p.m.	10.10 a.m. (1st)

STALLION PARADES, TIME TABLE—*continued.*

No. and Date.	Parade.	Time.	Officer Arrives.	Officer Departs.
No. 14.				
Monday, August 5	Colac, Butter Factory	11.30 a.m.	11.7 a.m.	Driving
Monday, August 5	Birregurra Railway Station	2 p.m.	Driving	Driving
Tuesday, August 6	Winchelsea Railway Station	10 a.m.	6.45 a.m.	11.6 a.m.
Tuesday, August 6	Werribee Railway Station	1 p.m.	1 p.m.	2.20 p.m.
Tuesday, August 6	Lara Railway Station	2.45 p.m.	2.45 p.m.	4.43 p.m.
Wednesday, August 7	Cressy Railway Station	11.15 a.m.	11.11 a.m.	Driving
Wednesday, August 7	Vite Vite Railway Station	1.30 p.m.	Driving	Driving
Wednesday, August 7	Westmere Railway Station	2.30 p.m.	Driving	Driving
Wednesday, August 7	Lismore Railway Station	3.45 p.m.	Driving	5.20 p.m.
Thursday, August 8	Geelong, Myers-street Sale Yards	10 a.m.	8.30 p.m. (7th)	Driving
Thursday, August 8	Bannockburn Railway Station	12 noon	Driving	Driving
Thursday, August 8	Inverleigh Railway Station	1 p.m.	Driving	Driving
No. 15.				
Monday, August 5	Alexandra Police Station	2 p.m.	12.30 p.m.	4.35 p.m.
Tuesday, August 6	Yea Railway Station	10.15 a.m.	10.15 a.m.	10.35 a.m.
Tuesday, August 6	Mansfield, Delatite Hotel	2.30 p.m.	1.50 p.m.	3.30 p.m.
Wednesday, August 7	Barnawartha Railway Station	2 p.m.	1.55 p.m.	3.58 p.m.
Thursday, August 8	Wangaratta Show Grounds	9 a.m.	4.48 p.m. (7th)	Driving
Thursday, August 8	Oxley Railway Station	10.30 a.m.	Driving	Driving
Thursday, August 8	Moyhu Railway Station	11 a.m.	Driving	Driving
Thursday, August 8	Milawa	12 noon	Driving	Driving
Thursday, August 8	Myrtleford Railway Station	1 p.m.	Driving	Driving
Thursday, August 8	Beechworth, Tanswell's Hotel	3 p.m.	Driving	Driving
No. 16.				
Tuesday, August 6	Pyramid Railway Station	9 a.m.	8.14 p.m. (5th)	9.47 a.m.
Tuesday, August 6	Mitiamo Railway Station	12 noon	10 a.m.	Driving
Tuesday, August 6	Tandarra Railway Station	2.30 p.m.	Driving	4.11 p.m.
Wednesday, August 7	Bendigo Show Grounds	10 a.m.	6 p.m. (6th)	Driving
Wednesday, August 7	Eddington Hotel	1 p.m.	Driving	Driving
Wednesday, August 7	Eastville	2 p.m.	Driving	Driving
Wednesday, August 7	Baringhup	2.30 p.m.	Driving	Driving
Wednesday, August 7	Maldon Railway Station	3.30 p.m.	Driving	Driving
Wednesday, August 7	Newstead Railway Station	4.30 p.m.	Driving	Driving
Wednesday, August 7	Castlemaine Railway Station	5.15 p.m.	Driving	7.19 p.m.
Thursday, August 8	Sunbury Show Grounds	9 a.m.	8.49 a.m.	9.36 a.m.
Friday, August 9	Kilmore Royal Oak Hotel	9 a.m.	8.58 a.m.	Driving
No. 17.				
Tuesday, August 13	Hamilton Police Station	9.30 a.m.	4.30 p.m. (12th)	Driving
Tuesday, August 13	Coleraine, Coleraine Hotel	11 a.m.	Driving	Driving
Tuesday, August 13	Casterton, Albion Hotel	12.30 p.m.	Driving	Driving
Tuesday, August 13	Branxholme Railway Station	4 p.m.	Driving	5.25 p.m.
Wednesday, August 14	Heywood Railway Station	9 a.m.	6.45 p.m. (13th)	Driving
Wednesday, August 14	Portland Post Office	10.30 a.m.	Driving	By Bus 11.30 a.m
Wednesday, August 14	Port Fairy, Star of the West Hotel	1 p.m.	Driving	1.35 p.m.
Wednesday, August 14	Warrnambool Sale Yards	3.15 p.m.	2.58 p.m.	Driving
Thursday, August 15	Koroit, Koroit Inn Hotel	11 a.m.	Driving	Driving
Thursday, August 15	Hawkesdale Hotel	1.30 p.m.	Driving	Driving
Thursday, August 15	Penshurst Police Station	3 p.m.	Driving	Driving
Friday, August 16	Terang, Macdonald's Yard	9.30 a.m.	8.34 a.m.	Driving
Friday, August 16	Mortlake, Mt. Shadwell Hotel	11 a.m.	Driving	Driving
Friday, August 16	Camperdown, Dalgety's Yards	2 p.m.	Driving	4.55 p.m.
No. 18.				
Monday, August 12	Sale Railway Station	1.30 p.m.	12.55 p.m.	Driving
Monday, August 12	Kilmany Railway Station	3 p.m.	Driving	4.40 p.m.
Tuesday, August 13	Morwell Railway Station	10 a.m.	5.34 p.m. (12th)	11.41 a.m.
Tuesday, August 13	Maffra Railway Station	2 p.m.	1.35 p.m.	3.40 p.m.
Tuesday, August 13	Cowwarr Railway Station	4.25 p.m.	4.23 p.m.	8.41 a.m. (14th)
Wednesday, August 14	Traralgon Railway Station	10 a.m.	9.25 a.m.	12 noon
Wednesday, August 14	Rosedale Railway Station	3 p.m.	12.24 p.m.	4.52 p.m.
Thursday, August 15	Bunyip Railway Station	9 a.m.	7.32 p.m. (14th)	9.52 a.m.
Thursday, August 15	Warragul Show Grounds	10.20 a.m.	10.20 a.m.	11.5 a.m.

STALLION PARADES, TIME TABLE—*continued.*

No. and Date.	Parade.	Time.	Officer Arrives.	Officer Departs.
No. 19.				
Monday, August 12 ..	Mernda Railway Station ..	10.21 a.m. ..	10.17 a.m. ..	11.2 a.m.
Tuesday, August 13 ..	Wallace Railway Station ..	10.41 a.m. ..	10.41 a.m. ..	Driving
Tuesday, August 13 ..	Ballan Railway Station ..	11.30 a.m. ..	Driving ..	12.43 p.m.
Tuesday, August 13 ..	Bacchus Marsh, Border Inn Hotel	2 p.m. ..	1.7 p.m. ..	Driving
Tuesday, August 13 ..	Melton Railway Station ..	4 p.m. ..	Driving ..	8.5 p.m.
Wednesday, August 14	Romsey Railway Station ..	10.30 a.m. ..	10.30 a.m. ..	1.15 p.m.
Thursday, August 15 ..	Lilydale Railway Station ..	2 p.m. ..	1.59 p.m. ..	3.3 p.m. (Road motor)
Thursday, August 15 ..	Millgrove Railway Station ..	4 p.m. ..	4 p.m. ..	5.45 p.m.
Friday, August 16 ..	Frankston Railway Station ..	10.5 a.m. ..	10.5 a.m. ..	10.22 a.m.
No. 20.				
Monday, August 19 ..	Daylesford, Raglan Hotel ..	12 noon ..	11.5 a.m. ..	2 p.m.
Monday, August 19 ..	Kingston Hotel	3.50 p.m. ..	3.50 p.m. ..	Driving
Monday, August 19 ..	Creswick Post Office	4.30 p.m. ..	Driving ..	8.15 a.m. (20th)
Tuesday, August 20 ..	Waubra Post Office	10 a.m. ..	Driving ..	Driving
Tuesday, August 20 ..	Burrumbeet Railway Station ..	11 a.m. ..	Driving ..	Driving
Tuesday, August 20 ..	Trawalla Railway Station ..	12 noon ..	Driving ..	Driving
Tuesday, August 20 ..	Skipton Post Office	2 p.m. ..	Driving ..	Driving
Tuesday, August 20 ..	Linton Post Office	3 p.m. ..	Driving ..	Driving
Wednesday, August 21	Ballarat, Haymarket	10 a.m. ..	Driving ..	12 noon
Thursday, August 22 ..	Kyneton Show Grounds.. ..	10.5 a.m. ..	10.4 a.m. ..	Driving
Thursday, August 22 ..	Redesdale Hotel	12 noon ..	Driving ..	Driving
No. 21.				
Tuesday, August 20 ..	Orbost, Club Hotel	9 a.m. ..	5.15 p.m. (19th)	11 a.m.
Tuesday, August 20 ..	Bairnsdale Sale Yards	1 p.m. ..	1 p.m. ..	Driving
Wednesday, August 21	Omeo, Golden Age Hotel ..	8 a.m. ..	Driving ..	Driving
Wednesday, August 21	Tongio Homestead	9.30 a.m. ..	Driving ..	Driving
Wednesday, August 21	Ensay South	10 a.m. ..	Driving ..	Driving
Thursday, August 22 ..	Buchan	8 a.m. ..	Driving ..	Driving
No. 22.				
Monday, August 19 ..	Wonthaggi Railway Station ..	11.55 a.m. ..	11.50 a.m. ..	Driving
Monday, August 19 ..	Anderson Railway Station ..	2 p.m. ..	Driving ..	5.19 p.m.
Tuesday, August 20 ..	Stony Creek Railway Station ..	10 a.m. ..	Driving ..	Driving
Tuesday, August 20 ..	Foster Railway Station	12 noon ..	Driving ..	12.35 p.m.
Tuesday, August 20 ..	Yarram Sale Yards	2 p.m. ..	1.35 p.m. ..	7 a.m. (21st)
Wednesday, August 21	Korumburra Railway Station ..	10 a.m. ..	9.20 a.m. ..	11.13 a.m.
Wednesday, August 21	Leongatha Railway Station ..	12 noon ..	11.33 a.m. ..	5.10 p.m.
Thursday, August 22 ..	Cranbourne Railway Station ..	9.30 a.m. ..	7.51 p.m. (21st)	10.57 a.m.
Thursday, August 22 ..	Dandenong Railway Station ..	11.15 a.m. ..	11.13 a.m. ..	12.10 p.m.
No. 23.				
Wednesday. September 18	Royal Show	10 a.m.		
Thursday, September 19	Royal Show	9 a.m.		

Irrigated Pastures and Lucerne

Stanhope Competition

Report of the Judges, Messrs. E. Ryland and J. Barrett (Closer Settlement Commission), and E. T. Beruldsen, B.Sc.Agric. (Department of Agriculture).

THAT settlers in the Stanhope district are keenly interested in the development of irrigated pastures is indicated by the record number of sixteen entries in this section of the annual competition. The general excellence of the exhibits is evidenced by the fact that the carrying capacity of one or two of the best paddocks approached two cows per acre. This highly satisfactory result has been achieved only by assiduous attention to watering, manuring, and the judicious grazing off of the pastures. The important part played by the establishment of the best strains of the various species was demonstrated also by the fact that, in some of the leading pastures, certified perennial rye-grass and white clover had contributed largely to the high production of these fields and to their general attractiveness.

The variety of soil conditions noted during the inspection proved the adaptability of mixed pastures of grasses and clovers to a wide range of conditions.

That pastures established under indifferent soil conditions will respond to good treatment was exemplified by Mr. F. Warman's exhibit. This pasture had been sown in April, 1933, on an old lucerne stand which had been scarified up. The mixture, consisting of Hawke's Bay perennial rye-grass, cocksfoot, New Zealand certified white clover, cow grass, alsike and subterranean clovers, was sown with 90 lb. of superphosphate per acre. Prior to lucerne, during which time it had not been consistently manured, the land was devoted to cereal cropping for many years.

The pasture was given a bag of superphosphate per acre during both April and August, 1934. At the first inspection, at the beginning of November, Mr. Warman expressed slight disappointment with the development of the pasture despite the fact that he had adopted the practice of watering every fortnight. A fortnight's growth was presented following a heavy grazing off with sheep. All the species were well represented, but the only one making vigorous growth at the time was subterranean clover. Another bag of superphosphate per acre was applied during February, 1935, and at the second inspection, at the end of March, the improvement in the pasture was phenomenal. This improvement undoubtedly was the result of the gradual building up of the fertility of the soil by consistent and liberal manuring with superphosphate, while at the same time supplying adequate moisture.

To further illustrate this point, it may be mentioned that some advice was sought with regard to another pasture—not in the competition—which had been established on plain land, and in which the only species making vigorous growth was subterranean clover. Adequate watering methods were employed. Previous history revealed, however, that very little superphosphate had been applied to this land prior to the establishment of the pasture.

The fertility requirements of species, such as perennial rye-grass and white clover, are much higher than those of subterranean clover, and for these desirable species to develop properly in an irrigated pasture, it is necessary that at least 2 cwt. of superphosphate be applied annually. Where manuring has been neglected and there has been a big drain on the phosphoric acid in the soil, it is good policy to apply rather larger dressings than 2 cwt. to hasten the recovery in fertility.

In the manurial experiments on irrigated pasture which have been in operation for ten years at the State Research Farm, Werribee, it has been shown definitely that a larger percentage of subterranean clover is present on the plots receiving 1 cwt. of superphosphate than on the 2-cwt. plots. Further, the development of white clover on the 1-cwt. plots is stunted compared with that on the 2-cwt. areas. Partly as a result of this comparatively large amount of subterranean clover, the yields from the first spring growth on the 1-cwt. plots compare favorably with those to which 2, 3, and 4 cwt. respectively have been applied, but the

Portion of Mr. P. McPherson's herd grazing on the winning pasture.

The Awards.

The winning pasture, exhibited by Mr. P. McPherson, was sown in May, 1932, on the site of an old lucerne stand. A crop of oats and a period of summer fallow preceded the establishment of the pasture. The mixture sown was 8 lb. of a good perennial type of rye-grass, 3 lb. of cocksfoot, 2 lb. Italian rye-grass, 2 lb. cow grass, 1 lb. New Zealand wild white clover, and 2 lb. subterranean clover per acre. A bag of superphosphate per acre was used at seeding, and one bag per acre has been applied each spring and autumn since. During the summer approximately ten days elapse between

superiority of the heavier dressings is easily understood when one examines the distribution of the yields throughout the year. The proper development of white clover is reflected in the high summer production when it normally is at its peak, while no production whatever is obtainable during the summer months from an annual like subterranean clover. Also, in the case of the 3-cwt. and 4-cwt. dressings, persistently heavy yields are obtained throughout the summer and well into the autumn, while the growth on the 1cwt. plots peters out early in the summer, and that on the 2-cwt. plots well before the autumn. These results apply where frequent waterings are given.

To summarize, where large amounts of herbage are being induced to grow by means of adequate watering, and consequently large amounts of phosphoric acid are being drained from the soil, it is necessary to make some provision for the replacement of this mineral material by supplying adequate quantities of manure.

That practical farmers had discovered the profit to be gained by liberal dressings of superphosphate was exemplified in the fact that several of the exhibitors were applying from 3 to 4 cwt. per acre to their pastures each year.

At the second inspection of the pastures it was pleasing to note their good recovery from the severe attack by grasshoppers during last December. In all cases this recovery was due to the immediate irrigation of the pastures following the attack. A pasture which was being irrigated at the time of the invasion had suffered least.

Table I. — Stanhope Irrigated Pasture Competition, 1934–1935: Average of Two Inspections.

Exhibitor.	Layout for Irrigation and Condition of Channels. (20)	Condition of the Pasture. (20)	Uniformity. (20)	Mixture. (20)	Freedom from Weeds. (20)	Total. (100)
P. McPherson ..	19½	20	19	19	19½	97
A. Cowie ..	18½	19	17½	19	19	93
S. Meadowcroft	19	18½	17	18½	18½	91½
J. Britnell, Exhibit A	16½	18½	18½	18	18½	90
F. Warman ..	17	18½	16½	18½	19	89½
N. Crooks ..	18	18	16½	17	19	88½
O. Ussher, Exhibit A	17½	18	18	16	19	88½
J. Britnell, Exhibit B	16½	18	17½	18	18	88
J. D. Crothers, Exhibit A	18	17	16½	17½	17½	86½
P. R. Johnson ..	18½	16½	15½	17½	18	86
J. D. Crothers, Exhibit B	18	15½	17	16	19	85½
O. Ussher, Exhibit B	17½	16	15½	17	18	84
J. Bell ..	17	15½	17	16	18	83½
Vaughan Bros. ..	16½	17	16	17½	16	83
E. E. Black ..	15½	16	15	16½	16	79
L. Barcoe ..	16	15	14	16½	14	75½

waterings. The stemmy portions left by the stock are clipped periodically with the mower, and this practice has been responsible for the remarkably even growth. A well-balanced mixture of the grasses and clovers was noted, and the condition of the herbage left nothing to be desired.

Apparently some trouble had been exerted to insure proper grading, the irrigation ditches were very clean, and proper provision was made for drainage at the ends of the bays. The pasture was grazed by 40 milking cows for five or six days, and then spelled for three weeks before the cows grazed it again. The pasture is a splendid tribute to Mr. McPherson's intelligent management, and there is no doubt that he obtains his reward in the very high carrying capacity of this paddock.

Mr. A. Cowie exhibited a splendid pasture of 5 acres, established in May, 1933, on an old lucerne stand which had been ploughed up and re-graded. The mixture sown differed slightly from that of Mr. McPherson's in that New Zealand Hawke's Bay rye-grass had been sown with 2 lb. of lucerne and 1 lb. of alsike clover. Superphosphate at the rate of 60 lb. per acre was used at seeding, while one bag per acre was applied during the autumn, 1934, and another bag per acre during February, 1935. The pasture is watered once a fortnight, and at both inspections it was in very good condition. Except for a few rank patches, it was fairly uniform also. The Hawke's Bay rye-grass was very attractive, and, generally, all the species were well represented.

As evidence of the high carrying capacity of this pasture, it has been possible for Mr. Cowie to have sheep on agistment occasionally in addition to the regular grazing of the paddock for one week out of every four by 27 milking cows.

Some of Mr. A. Cowie's herd grazing on mixed pastures at Stanhope.

Mr. J. D. Crothers' herd on mixed pastures.

Another excellent pasture was exhibited by Mr. S. Meadowcroft. The area of 3½ acres previously had been under lucerne. The paddock was scarified thoroughly in the autumn of 1932, and sown down in May of that year with 14 lb. Hawke's Bay rye-grass, 4 lb. Akaroa cocksfoot, 1 lb. Timothy, 2 lb. certified New Zealand wild white clover, and 1 lb. each of cow grass and alsike clover, with one bag of superphosphate per acre. A further bag of superphosphate per acre has been applied each spring and autumn since. Excellent rye-grass and white clover were prominent, while cocksfoot was developing nicely. The condition of the pasture was very good at both inspections, but at the second inspection its uniformity had suffered, evidently from the after-effects of the grasshopper attack. The paddock is used for night grazing, every alternate fortnight, by 34 Jersey cows. In addition, the pasture is grazed intermittently by sheep.

A very interesting feature on this property was a small paddock of Phalaris tuberosa and subterranean clover, which was sown down during autumn last year. Only 2 lb. of Phalaris and 1 lb. of subterranean clover had seen sown, and the establishment was really good. At the end of March this year the paddock had been watered once, a fresh vigorous growth of Phalaris tuberosa was present, the subterranean clover had germinated well, and the young plants were making good growth. This paddock is not watered in the summer, as it is intended primarily for winter grazing. However, the perennial Phalaris had remained slightly green throughout.

Lucerne.

Excellent lucerne stands are to be found in the Stanhope district, and those exhibited in this competition were very worthy representatives.

Lucerne is a great pioneering crop in the irrigation districts, and there is no doubt that the success of the pastures established in this district in recent years has been due, in part, to the fact that in most instances lucerne preceded the pasture. The farmer who has not a certain proportion of his area under lucerne is at a decided disadvantage, as there is no doubt that no more excellent supplement to the grazing areas could be found. When cut for hay, given liberal treatment with superphosphate and care in watering, lucerne will live for years, and provide excellent yields of conserved fodder for the lean periods.

The high standard of the exhibits in this competition can be attributed mainly to the consistent top-dressing with superphosphate.

The inspection of the exhibits coincided with an invasion of grasshoppers in the district, but fortunately judging was completed before much damage had been done.

Mr. A. E. Enders exhibited lucerne which had been sown down in October, 1932, with 10 lb. of seed and 1 cwt. of superphosphate per acre, on land which had been cropped with cereals for many years previously. One bag of superphosphate per acre has been applied each spring since establishment. The lucerne was grazed during the first year, and has been cut for hay in the last two seasons. The area had been subdivided so that two areas of 4 acres were available for judging. About three weeks' growth was represented at the time of inspection, and there promised to be a good yield of high quality hay. In both paddocks weed growth was negligible. The No. 1 exhibit, which was the one nearer the homestead, gained first prize, being more uniform and having the advantage in apparent yield over the No. 2 entry. The latter obtained second place.

TABLE II.—STANHOPE LUCERNE COMPETITION.

Exhibitor.	Lay-out for Irrigation and Condition of Channels. (20)	Estimated Yield. (20)	Quality. (20)	Uniformity. (20)	Freedom from Weeds. (20)	Total. (100)
A. E. Enders, No. 1	18	19	18	18	20	93
A. E. Enders, No. 2	18	18	18	17	20	91
A. F. Chester ..	17	18	18	17	19	89
C. Tucknatt, No. 1	19	16	17½	18½	16	87
C. Tucknatt, No. 2	19	16	17	17	17	86
Brock Bros. ..	17	17	17	18	17	86
O. Ussher ..	17	17	18	16	17	85
P. Doyle ..	17	16	16	15	20	84

Third prize went to Mr. A. F. Chester, whose 3½-acre paddock was sown down during September, 1933, with 8 lb. of seed and 90 lb. of superphosphate. A crop of oats had been taken off the year previously. A further 150 lb. of superphosphate was applied the following spring. The paddock had been watered twice, and at the time of inspection the crop was ready for the second cut, representing four weeks' growth. The lucerne was very clean, and except for a few patches was very uniform. A high yield of hay was to be expected.

Mr. C. Tucknatt exhibited two paddocks of 9 acres, which had been in lucerne originally. Prior to resowing with 8½ lb. of lucerne seed and 1 cwt. of superphosphate per acre, two oat crops, each receiving 90 lb. of superphosphate, had been harvested, followed by a period of summer fallow. As the stand was a few months old only, the lucerne had not had sufficient time to suppress the weed growth, and a fair amount of hog weed, flat weed (*Hypochaeris* spp.), and a few thistles were present. The young lucerne had been grazed until about a month before the inspection.

Plant Quarantine*

By S. Fish, M.Agr.Sc., Biologist

THE object of plant quarantine is to prevent the introduction of plant diseases and pests into a country where they are not already established, without imposing any unnecessary restriction on the movement of trade in agricultural products.

There are many factors which need careful investigation before quarantine measures are promulgated. In the first place, the particular disease or pest under discussion must be such that it is liable to become a major disease or pest under the new conditions. The difficulty of determining this point is obvious, and in practice one can be guided only by such data as exist on the incidence of the disease and its severity in relation to meteorological studies, and also on any evidence based on experimental work in relation to its optimum conditions for infection and development. Even where such information is available, a general idea only of the probability of its possible severity under the new conditions can be gathered, and this may involve honest differences of opinion.

Where the evidence is such that it suggests that the pest or disease in question is liable to be a major trouble, it must then be examined from the point of view of the possible avenues by which its dispersal from one place to another is possible. This always involves the consideration as to whether natural means of dispersal exist, and, if so, the efficacy of any possible quarantine measures would be doubtful. Where natural barriers against the introduction from other countries exist, as is the case with Australia, it is obvious that the human agency is the only way in which dispersal is possible. This being so, attention must be given, firstly, to determine what constitute major avenues, and how far in practice it is possible to eliminate such avenues. The present status of biological information in the case of the particular disease or pest under discussion determines how accurately such points can be estimated.

The economic effect of proposed measures must be considered. The quarantine costs and possible trade restriction from other countries as against the cost of any control measures if they are available, and the possibility of outside quarantines as the result of the new introduction, are all points which are difficult to assess. The chance of possible repercussions on trade from plant quarantine action is bound up with the soundness or otherwise of the scientific basis on which quarantine measures are based. It is obvious that quarantine measures, even though resting on a sound scientific basis, may incidentally result in the protection of certain primary industries, and thus appear to support the occasional suggestion of the illegitimate use of plant quarantine for trade embargo purposes. Quarantines which are not sound will quickly produce trade complications, and will also shatter public confidence even in vital quarantine measures. The practicability, both from the administrative and legal standpoints, of adopting the precautions dictated by the scientific considerations of the pest or disease constitutes the main administrative problem of plant quarantine.

The methods available for the application of plant quarantine principles to practice, consist of the inspection of plants and plant parts at the ports of origin and entry, the total prohibition method, and controlled introduction. In the early history of plant quarantine it was natural that the total prohibition or the safety-first method, should be adopted, but it must be remembered that the stimulus given to the study of plant pathology and entomology over the past quarter of a century, has resulted in the filling of many gaps in biological knowledge which, in some cases, has made possible the modification of such a stringent method of quarantine. Apart from this, owing possibly to post-war economic depression, the trade reactions due to total prohibitions have demonstrated the urgent need for modified methods where possible. At the present time it is not possible to discard this method entirely; for example, it would be quite unwise for Australia to accept, on a commercial scale, nursery stocks of, say, apples and pears from a country

* This paper formed part of a discussion on Plant Quarantine at the congress of the Australian and New Zealand Association for the Advancement of Science, Melbourne, January, 1935.

[*Continued on page* 301.

Rabbit Destruction

Digging Out, Poisoning, and Fumigation

ALL land-holders are compelled, by a recent proclamation under the *Vermin and Noxious Weeds Act* 1928, to destroy all vermin on land occupied by them, and on the adjacent half-widths of all roads adjoining their properties. This simultaneous destruction of vermin was to commence on 23rd January, 1935.

That it is essential that vigorous steps be taken to control the rabbit pest is indicated by the marked increase in their numbers, both in Victoria and New South Wales, during the past few years. If one or other of the various methods of eradication and destruction which are available be carried out by all land-holders the menace should be effectively checked. Co-operation between the owners of adjacent properties will contribute largely to the success of any scheme designed to control this pest.

Rabbit destruction may be carried out more effectively at some periods of the year than others, one of the most favorable being that just prior to the spring breeding season.

A campaign against the rabbits has begun again, and the conditions prevailing throughout the State are such as to be in favour of carrying out very effectively any of the methods described. Crown lands are being cleaned up, and it is intended to strictly enforce the provisions of the Vermin and Noxious Weeds Act in all cases where neglect is shown.

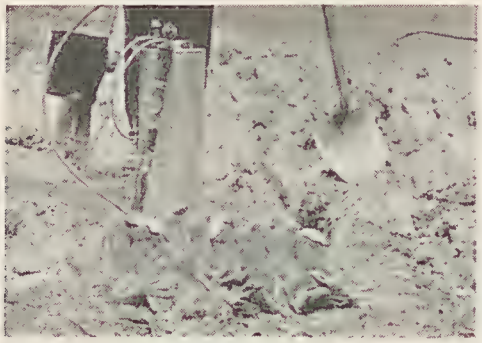
The principal methods of dealing with the rabbit pest during the winter, and which are advocated by Mr. J. Matthams, Superintendent of the Vermin and Noxious Weeds Branch of the Lands Department, are digging out, strychnine poisoning, and fumigation.

Digging Out.

Winter time is the most suitable time for digging out, as the earth is in a moist and easily workable condition. Before commencing work each day the paddock should be scoured with dogs, so that any rabbits which may be hidden in surface cover will be hunted into the burrows. When commencing operations always dig from the boundaries of the paddock towards the centre, as the tendency is for the rabbits to go into rather than out of it.

All branches and offshoots of large burrows should be marked with a stake, so that after the main burrow has been dug out these may be located and dealt with. Digging out, while being one of the most successful methods of

Fumigating a warren.



Result of digging out a warren after fumigation.

dealing with the rabbit, must be done thoroughly to ensure success. To dig out a main burrow and neglect an offshoot containing rabbits is most unsatisfactory and, in fact, is useless. To avoid portion of a burrow remaining habitable, the only safe way is to mark all outlets before commencing to deal with the main portion. After digging out a burrow thoroughly it is desirable to fill it in again in order to avoid possible injury to stock.

The inspection of all burrows a few days after they have been dug out is a good plan. In this way one can make certain that no offshoots containing rabbits have been missed.

Poisoning.

Although rabbits will not take apples and carrots as readily during the winter as they will during the summer, when there is an absence of juicy food, they apparently relish the change of diet provided by apples and carrots. For this reason strychnine poisoning is carried out regularly during the winter months by many farmers, and has proved a very successful method of destruction.

When using apples for bait, it is desirable, where possible, to select only fruit that is sweet and sound. The addition of a little sugar both for free feeding or when mixed with poison is advised also, as it is necessary to have the unpoisoned and poisoned bait as attractive as possible. When preparing the bait, the apples should be cut up into small cubes, with each surface about half an inch square. If sour apples only can be obtained, 1 lb. of sugar should be sprinkled on to each 12 lb. of bait.

Mix the sugar with the bait, then lay it out on a bag for some time to drain. Place 2 or 3 lb. of bait in the mixing vessel, then sprinkle a little strychnine on to it and mix thoroughly. Add more bait and sprinkle more poison until the whole quantity required for the poisoning has been mixed. One ounce of strychnine should be used with every 12 to 16 lb. of bait. If the strychnine is not in its powdered form, it will be necessary to powder it by rolling it with a bottle on strong brown paper, or suitable substance from which it can be deposited conveniently into a pepper canister or a small round tin with a perforated lid. The poison baits should be laid from about 18 inches to 5 feet apart, according to the state of infestation of the country.

Carrots are prepared in the same way as apples. In this case the addition of sugar is essential, otherwise the poison will not adhere to the bait. The carrots when cut up and mixed with sugar must be allowed to drain on a bag before dusting with strychnine.

The bait is laid in furrows, which should run as close as possible to the infested spots, and be situated in such a way that the rabbits have to cross them to reach their feeding grounds. In such cases where the country is eaten out and polluted, as frequently occurs during the dry season of the year, the furrows should not be drawn close to the burrows, as the rabbits may travel some distance to their feeding

Dead rabbits near a furrow after strychnine poisoning.

grounds without stopping. During the breeding season, however, if the grass is plentiful near the burrows, a number of kittens which are independent of their mothers but do not travel far from home, will be accounted for by laying bait near the burrows.

It is desirable to give two or three free feeds before laying the poisoned bait, but care should be taken to make the free bait attractive.

Fumigation.

Fumigation has proved to be a practical method of rabbit extermination. The better known fumigants which are in use are carbon bi-sulphide, commonly called "carbon," and calcium cyanide. Fumigants are found particularly useful in destroying rabbits in hard or rocky land, in the banks of creeks, under shelves of rock, and other places where the ordinary digging-out methods cannot be performed except with difficulty and an amount of labour disproportionate to the value of the work done.

Some land-holders rely almost solely on fumigation for rabbit destruction. On large holdings, especially, it is found to be a quicker and less expensive method than digging out.

In using the fumigator the hose connexion is inserted into the burrow, after which the mouth of the burrow is broken down and the earth is packed tightly round the hose. When this is done and all openings to the burrow are blocked up the fumes are pumped in.

It is advisable that the opening into which the hose is inserted should be selected on the windward side, so that the escaping fumes will not blow back on the operator.

Plant Quarantine (*Continued from page 298.*)

where fireblight is known to exist. Total prohibition should be confined to what, after a thorough examination of the facts, are classed as possible major diseases or pests, and then only when the principal avenues by which they could be introduced cannot be eliminated. The general scientific recognition of such a fact would be the justification for the action.

In systems of quarantine merely based on inspection, either at the port of origin or the port of destination, or both, it has been shown that it is not possible to prevent the introduction of pests and diseases by such methods. That certain important seed-borne diseases have become established within recent years in Australia, in spite of such methods, fits in with overseas experience as to the limitations of systems based merely on inspection. The difficulties with which an inspector is sometimes faced, no matter how highly qualified he may be, are, firstly, the practical impossibility of examining more than a part of the commercial consignment and also the difficulty sometimes of detecting the presence of the particular organism in question even with the most careful examinations.

The present trend of plant quarantine is definitely in the direction of controlled introduction of plants and plant parts. Such a method, in many cases, is capable of giving the desired protection without restraint of trade. Under this system plant material is introduced if certified by competent authorities that it has originated in a clean area, or that it has been treated by a method of sterilization which is recognized as being effective for the particular disease or pest under consideration. The soundness of this method depends on the existence of exact data as to the geographical distribution of plant diseases and pests in question, hence the necessity for the extension and publication of plant disease and insect pest survey work.

With the aid of a properly equipped and efficiently organized quarantine station, it is felt that the introduction for propagating purposes, of small quantities of plant material possessing some desirable horticultural characters, even though accompanied by a risk of serious pest or disease introduction, could be effectively handled. Unless, however, proper facilities are available, such a station may be a menace rather than an aid. The recent lessons which Australia has had of the introduction of new and serious seed-borne diseases such as tomato leaf mould (*Cladosporium fulvum* Cooke), tomato canker (*Aplanobacter michiganese* Smith), and others, have demonstrated the urgent necessity for the extension of the method of controlled introduction based on sound biological information.

REFERENCES

(1) Magee, C. J. Tomato Leaf Mould, *Ag. Gaz.*, *N.S.W.*, Vol. XLV. 1, p. 24, 1934.

(2) R. J. Noble. Paper read at a meeting of the Australian and New Zealand Association for the Advancement of Science, Melbourne, 1935. Unpublished.

Orchard and Garden Notes

By Edward E. Pescott, F.L.S., Senior Horticultural Instructor.

The Flower Garden.

THIS month plantings should be made in the garden of shrubs and plants intended to have a permanent place there. Much attention is being given at the present time to the planting of trees and shrubs of general colour foliage, as well as those which will give autumn tints.

For purple foliage there are the various forms of *Prunus Pissardi,* the Persian plum, and also the Raywood Ash. Both are deciduous, and both show the richness of purplish tones all through the growing season. For a low shrub of the same type of colour, there is Thunberg's purple Berberis. Another excellent shrub of purplish foliage is the European Smoke bush, *Cotinus.* The decorative woolly flowers in summer add a beauty to the shrub. All these plants develop a reddish foliage in autumn.

For golden foliage, there are the Maidenhair tree, the Tulip tree, and the Golden Ash; all are deciduous. There are as well several forms of golden Cypress; they will be discussed next month.

The red or autumn colouring of foliage is not found generally in spring or summer-growing plants; but there are many autumn-foliaged plants. Japanese Maples colour well; so do the Scarlet and the Pin Oaks, the former being the brighter. Various species of Rhus should be planted; and one of the finest of all autumn-foliaged shrubs is the Liquid-ambar, which gives tones of bronze, yellow, and red.

Daffodil

The Orchard.

In peach districts preparation may be made for an attack against green peach aphis. Where it has already appeared, or where its presence is suspected, the trees should be sprayed with tar distillate, 1 in 30, during the last week in June. This spray is considered as an ovicide, and is quite effective.

The increase of cherry aphis in cherry districts, while not to an alarming degree, is sufficient to cause growers to make a more vigorous attack on this pest. Some orchardists have used tar distillate at the above strength with much success. No departmental work, however, has been yet done in suppressing this pest, and so no pronouncement can be made. At the same time, the cherry trees should be sprayed in winter, if not with tar distillate, then with a good oil spray. One most effective phase is the cutting and burning of all foliage shoots attacked in the growing season.

San José scale should be very vigorously attacked in winter. All infected or even suspected trees, and the surrounding ones as well, should be sprayed in June-July with red oil, 1 in 20; or with any other recognized strong winter oil.

Then there are such pests as mussel scale, red spider, Bryobia mite and pear leaf blister mite. All infested or attacked trees should be

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now sprayed either with lime sulphur, 1 in 9, or with a strong oil spray, used at winter strength. The last-named pest should be strongly fought, as it damages the foliage of pear trees very badly.

The Vegetable Garden.

This is the month for weeds. A crop of them grows much more freely than does a crop of vegetable seedlings. In many cases, especially in and among the rows of seedlings, all weeds must be hand cleaned away; the hoe can be used only between the rows.

Weeds also harbour young snails and slugs, which are now growing. Apart from weed clearing, the garden beds should be given a sprinkling of calcium arsenate and bran to keep these pests in check.

Weeds are frequently an indication of soil condition. A strong crop of "winter grass," *Pon annua,* suggests wet soil; it should be drained and given a good lime dusting.

Roots of large weeds should be examined for any mealy bug in the soil. These small insects infest weed and vegetable roots, and may be seen as small white patchy down. Where the pest is present, the soil should be well worked with lime or gypsum; if it be abundant, some soil fumigant or insecticide should be worked into the ground.

Asparagus beds must be cleaned out; all vacant spaces should be piled with new plants, and the soil made very rich around them.

Phylloxera-Resistant Vine Stocks (*Continued from page* 288.)

value under irrigation or in moist situations, since it combines most of that vine's good points with greater tolerance for moisture.

No. 157-11: *Berlandieri* x *Riparia.*—Raised by G. Coudere in 1889, by pollinating *Berlandieri de Las Sorres* by *Riparia Gloire.* The leaves are of a brilliant light-green colour, and have a crimped texture that recalls the pollen parent. This vine seems, indeed, to be more Riparia than either of the previous ones, which should lend it special interest under irrigation, as it tolerates moist conditions even better than does 34E. For dry areas, however, it seems unlikely to equal 420A.

No. 157-11 which has inherited more Riparia characteristics than 420A or 34E. (Three-eights natural size.

No. 161-49: *Riparia* x *Berlandieri*—Raised by Coudere subsequently to the previous vine. It will be observed that hybridization has in this case been reversed, Berlandieri acting as pollen parent. Notwithstanding the usual prepotency of the male, it has much of *V. Riparia* in its appearance, though in its aptitudes it inclines towards *Berlandieri,* especially as regards drought-resistance. It is, indeed one of the most promising of the *Berlandieri* hybrids, and has come very much to the fore in France recently, tending, according to Ravaz,* to dominate all the others. It seems to be one of the most interesting of the newer stocks, and to be well worthy of attention under our conditions. It has only recently been introduced, and is as yet untried here.

Further hybrids between *Berlandieri* and *Riparia* have been raised by Paulsen and Ruggieri in Sicily and Teleki in Hungary. They are excellent stocks, but do not seem to be superior to those just described.

* *Progrès Agricole,* 1933.

Standard Herd Records

Complete Return of the Cows which completed the Tests during the Quarter ended 31st March, 1935.

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 283, of which 233 qualified for the certificate. The figure in brackets after the owner's name shows the number of entries.

The amount of butter-fat required for qualification varies according to the age of the animal (up to five years at time of calving), the standards being as follow:—

Junior 2 year old (under 2½ years at time of calving)	230 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving)	250 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving)	270 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving)	290 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving)	310 lb butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving)	330 lb. butter fat.
Mature cow 5 years and over	350 lb butter fat.

(Except where otherwise stated, the period of Test was 273 days.)

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Allen, F. de V., Toora, Jersey (6).										
Glen Alice Charm ..	39795	9.5.34	22	7,434	5·39	400·61	250	Sr. 2	285 ..	Clarendon Eyre Student Prince
Glen Alice Charming Girl ..	43943	29.4.34	20	5,957	5·16	307·30	230	Jr. 2	.. ..	Starbright 2nd of Tooravale
Glen Alice Starleigh ..	39796	3.5.34	19½	7,077	5·71	404·23	250	Sr. 2	276 ..	Tooravale Goldspeck
Glen Alice Sybil	43946	7.5.34	17	5,076	5·27	267·73	230	Jr. 2	.. ..	Starbright 2nd of Tooravale
Wood Bell	36773	14.6.34	17	6,533	5·75	375·53	330	Sr. 4	296, 324 ..	Blackwood Valley Skim
Wood Gem	36774	18.4.34	23	6,981	5·89	411·06	290	Sr. 3	249 ..	Blackwood Valley Skim
Austin, F., Lara, Jersey (5).										
Avalon Gladstar's Pansy 6th	38723	25.5.34	9	6,366	5·25	334·22	250	Sr. 2	285 ..	Avalon Gladstar 2nd
Avalon Starbright Duchess	C.R.	25.5.34	22	6,866	6·24	428·61	230	Jr. 2	.. ..	Brucevale Lord Starbright
Avalon Noble's Pansy 9th ..	C.R.	16.6.34	16	5,498	5·95	327·50	230	Jr. 2	.. ..	Noble of Avalon
Avalon Noble's Pansy 5th ..	36835	27.5.34	12	6,222	6·17	383·87	290	Sr. 3	237, 311 ..	Noble of Avalon
Avalon Mercedes 16th Queen	36827	7.6.34	16	7,238	7·14	516·73	290	Sr. 3	354, 445 ..	Avalon Mercedes Chief 16th
Axford, W. H., Camperdown, Jersey (12).										
Leura Beauty 4th ..	25235	22.4.34	20	8,337	5·04	420·21	350	Mature	355 ..	Admiral of Leura
Leura Boronia 2nd ..	28857	23.4.34	29	9,159	4·63	423·78	350	Mature	374 ..	Curiosity's King of Comely Banks
Leura Boronia 5th ..	40673	18.4.34	20	6,909	5·15	355·90	250	Sr. 2	.. ..	Curiosity's King of Comely Banks
Leura Handsome Girl 4th ..	44880	15.6.34	10	5,025	5·65	284·02	230	Jr. 2	.. ..	Mornmoot Mosstrooper
Leura Lady Elector 3rd ..	24236	5.4.34	32	10,509	5·53	581·34	350	Mature	333, 382, 552	Admiral of Leura
Leura May 6th	36839	5.4.34	34	9,648	5·23	504·41	330	Sr. 4	396 ..	Admiral of Leura
Leura May 7th	36840	14.4.34	30	10,917	5·47	596·98	330	Sr. 4	444, 495 ..	Curiosity's King of Comely Banks
Leura May 8th	36841	10.6.34	14	7,647	5·12	391·64	330	Sr. 4	445 ..	Curiosity's King of Comely Banks
Leura Patricia 4th ..	25244	18.4.34	20	6,462	6·09	393·31	350	Mature	278 ..	Monitor of Leura
Leura Piccaninny 7th ..	41886	10.6.34	8	5,439	5·56	302·36	230	Jr. 2	.. ..	Leura Statesman
Leura Silverbelle 5th ..	24243	16.5.34	22	8,870	4·82	427·11	350	Mature	348 ..	Admiral of Leura
Leura Silverbelle 8th ..	40695	22.5.34	12½	5,799	5·01	290·57	270	Jr. 3	249 ..	Curiosity's King of Comely Banks
Belfield, G. H., Estate of the late, Coleraine, Jersey (1).										
Toolang Princess	28513	14.6.34	8½	6,651	5·42	360·27	350	Mature	225 ..	Clover Flat Lassie's Beau 3rd
Black, Mrs. A. J., Noorat, Jersey (4).										
Noorat Gauze	32987	14.4.34	15½	5,892	5·39	317·73	330	Sr. 4	259, 305 ..	Cellist of Warenda
Noorat Gazelle	25268	3.5.34	19	7,958	5·25	418·05	350	Mature	262, 274, 432, 422	Cellist of Warenda
Noorat Geranium	25269	8.6.34	20	6,678	5·91	394·43	350	Mature	288, 341, 377, 403	Cellist of Warenda
Noorat Mezzo	32992	21.6.34	14	7,538	5·53	416·73	350	Mature	.. ..	Cellist of Warenda
Black, I. S., Noorat, Ayrshire (3).										
Mount Noorat Alert ..	24144	1.5.34	20	8,403	4·59	385·49	290	Sr. 3	295 ..	Scottish Major of Gowrie Park
Mount Noorat Boronia ..	20554	9.6.34	22½	15,163	3·91	593·55	350	Mature	275, 363, 347	Scottish Fame of Gowrie Park
Mount Noorat Poppy ..	24148	2.4.34	20	9,381	3·88	363·76	310	Jr. 4	291 ..	Sparrovale Brilliant

STANDARD HERD RECORDS—*continued.*

Name of Cow	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Bott, J., Yarrawonga, Red Poll (1).											
Naranghi Julep	2938A	16.4.34	27½	9,643	3·82	368·28	290	Sr. 3	345	..	Woodburn Premier
Box, Dr. J., Estate of late, Whittlesea, Jersey (1).											
Bellfaire Blonde's Beatrice.. ..		8.6.34	21	7,025	5·42	380·47	270	Jr. 3	297	..	Napoleonette's Golden Oxford
Broad, A. A., Sutton Grange, Jersey (3).											
Grangelea Machree ..	44173	14.4.34	12½	4,361	6·16	268·96	230	Jr. 2	..	..	Grangelea Daffodil's Aero
Grangelea Rose 2nd ..	40065	1.4.34	18½	6,574	5·27	346·18	270	Jr. 3	283	..	Banyule Macon
Harcourt Maybelle ..	36969	21.5.34	22	8,820	4·38	385·99	250	Sr. 2	338	..	Preston Royal Fancy
Buchanan, J., Flinders, Ayrshire (3).											
Gleneira Bairn	18024	10.4.34	14½	7,779	4·17	324·38	350	Mature	342	..	Aristocrat of Gleneira
Gleneira Chic ..	20124	1.5.34	18½	9,522	4·79	456·10	350	Mature	371, 350, 416		Gleneira Briton
Gleneira Frown	21520	8.4.34	15	8,376	4·34	363·83	350	Mature	314, 316, 314		Gleneira Desmond
Calf, A. J., Werribee South, Jersey (1).											
Clydevale Carrilla ..	33266	24.5.34	20½	7,623	5·59	426·04	310	Jr. 4	..	..	Staghorn Master's Defiance
Chadderton, J. E., Hamilton, Jersey (6).											
Glen Leigh Dawn ..	33094	18.5.34	16	7,862	5·00	393·17	330	Sr. 4	328, 356	..	Strathkellar Topthorn
Glen Leigh Dewdrop 2nd ..	39841	17.4.34	15½	4,998	5·57	278·24	230	Jr. 2	..	..	Strathkellar Topthorn
Glen Leigh Dolly ..	39843	26.4.34	15½	5,001	5.46	272·89	230	Jr. 2	..	..	Strathkellar Topthorn
Glen Leigh Dora	25789	30.4.34	26	9,677	5·92	572·46	350	Mature	382, 495, 491, 495		Gadabout of Danton
Clover Flat Glossy 2nd ..	28531	5.5.34	21	8,306	5·44	451·73	350	Mature	385, 396, 407		Beau Brummell of Banyule
Glen Leigh Dream ..	37040	13.6.34	12	5,559	5·60	311·59	250	Sr. 2	231	..	Strathkellar Topthorn
Chester, E. N., Mount Scoble, Jersey (1).											
Radford Lady Golden ..	33117	17.6.34	24	6,730	5·45	366·65	310	Jr. 4	275, 250	..	Ballara Golden Lad
Chirnside, R. M. Whittlesea, Jersey (1).											
Werribee Princess Satisfaction	28543	2.4.34	35	10,425	6·53	680·42	350	Mature	595, 587	..	Werribee Butter King
Christian, Mrs. N. C., Mortlake, Jersey (1).											
Staghorn Northern Clementine	42012	24.4.34	19	6,031	5·96	359·88	290	Sr. 3	303, 193	..	Staghorn Northlarks Masterpiece
Clarke, A. B., Noorat, Jersey (1).											
Banyarra Melista 2nd ..	42873	18.4.34	18½	6,587	4·80	316·31	230	Jr. 2	..	..	Banyule Lord Silvair
Clarke, F. W., Toora, Jersey (1).											
Banyarra Syringa 3rd ..	42879	3.5.34	16	6,186	5·00	309·11	250	Sr. 2	..	..	Banyule Ventilation
Clark, P. W., Whittlesea, Jersey (1).											
Coodardy Gentle Annette ..	C.R.	11.4.34	9½	3,402	4·86	165·47	270	Jr. 3	293	..	Kantara Don Juan
Colenso, L. W. R., Alvie, Jersey (11).											
Hawthorn of Belmont ..	18666	5.4.34	9	6,207	5·44	337·67	350	Mature	435, 464, 539, 371		Vanilla's Hero of Tavistock
Normandie Buttercup 2nd..	33188	20.4.34	20½	7,902	5·65	446·52	330	Sr. 4	317, 486, 412		Peer of Lewisham
Normandie Hawthorn ..	33190	29.4.34	15	7,280	5·23	380·75	350	Mature	320, 427, 395		Peer of Lewisham
Normandie Hawthorn 2nd..	33191	7.5.34	18	9,268	5·35	495·99	290	Sr. 3	387	..	Peer of Lewisham
Normandie Hawthorn 3rd ..	41296	2.6.34	15	7,047	4·64	326·79	270	Jr. 3	284	..	Peer of Lewisham
Normandie Ilma 3rd ..	45472	12.5.34	11	4,422	5·44	240·81	230	Jr. 2	..	..	Peer of Lewisham
Normandie Mayflower 3rd..	33193	15.5.34	14	7,433	4·87	362·07	330	Sr. 4	290, 277, 382		Peer of Lewisham
Normandie Mayflower 4th..	33194	16.4.34	15	6,912	5·51	380·74	290	Sr. 3	376, 286	..	Normandie White Peer
Normandie Mayflower 6th..	45473	4.4.34	13	5,196	5·27	274·01	230	Jr. 2	..	..	Normandie Majestic
Normandie Primrose 3rd ..	45474	15.5.34	10	4,026	5·68	280·00	230	Jr. 2	..	..	Peer of Lewisham
Normandie Thelma 3rd ..	45475	20.6.34	10	6,151	5·28	324·85	230	Jr. 2	..	..	Peer of Lewisham
Coughlin, C., Yannathan, Jersey (4).											
Gladys Park Blue Bell ..	43934	14.6.34	14½	4,562	6·30	287·44	230	Jr. 2	..	..	Werribee Blue Bell's Masterpiece
Gladys Park Goldmine 2nd	43936	24.5.34	15	4,178	5·17	215·99	230	Jr. 2	..	..	Gladys Park Bonny Lad
Gladys Park Goldmine's Beauty 2nd	43937	11.4.34	13½	5,697	5·39	306·96	230	Jr. 2	..	..	Werribee Blue Bell's Masterpiece
Gladys Park Master's May..	43939	16.6.34	17½	5,399	5·97	322·62	230	Jr. 2	..	..	Werribee Blue Bell's Masterpiece
Crawford, Mrs. E., Traralgon, Jersey (3).											
Turro Park Eminent Duchess	33240	7.5.34	21	8,603	5·50	473·53	290	Sr. 3	376, 409	..	Aveley Drummer
Victoria Flare	42370	30.5.34	17	5,330	5·81	309·48	230	Jr. 2	..	..	Victoria Master Mariner
Wompini Sweet Marie ..	42573	19.6.34	13	5,353	5·73	306·69	330	Sr. 4	327	..	Brucevale Bright Star
Day, E., Penshurst, Jersey (1).											
Viewpoint Sunlight ..	28643	31.5.34	16½	6,719	5·12	344·46	350	Mature	242, 384, 383		Bracondale First Choice
De La Rue, N. C., Weering, Jersey (1).											
Lucerne Vale Madeira ..	44927	8.5.34	14	4,440	6·34	281·63	230	Jr. 2	..	..	Werribee Fancy Masterpiece
Department of Agriculture, Burnley, Jersey (2).											
Victoria Charm	28657	11.5.34	26	9,735	6·07	591·37	350	Mature	333, 411, 448		Admiral Collingwood
Victoria Flirt	33272	5.5.34	22½	7,124	6·79	483·59	310	Jr. 4	359, 390	..	Victoria Jack Tar

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Department of Agriculture, Werribee, Friesian (4).											
Victoria Sonorous Plebe ..	4239	8.6.34	35	12,105	3·64	440·66	250	Sr. 2	..	..	Victoria Topnote
Victoria Jingle Bell ..	4288	19.6.34	33½	10,176	3·80	386·91	230	Jr. 2	..	..	Victoria Joyous Mercedes
Victoria Gaiety	4287	23.6.34	27½	8,529	4·34	370·16	250	Sr. 2	..	..	Victoria Topnote
Victoria Chorus Girl ..	3759	20.6.34	29	13,472	3·78	509·71	290	Sr. 3	407	..	Dominion Oakdale
Department of Agriculture, Werribee, Red Poll (7).											
Victoria Bright Blue ..	3011A	6.6.34	16	6,384	4·56	290·95	270	Jr. 3	248	..	Dominion Bright Belgian
Victoria Eagle	2315A	10.5.34	5	7,530	5·11	384·70	350	Mature	298, 340, 383		Vice Regal
Victoria Greta	3023A	11.5.34	22	8,789	4·28	376·54	330	Sr. 4	256, 341	..	Vice Regal
Victoria Village Belle ..	1522AA	25.6.34	39	11,454	4·19	480·05	350	Mature	357, 402, 394, 423, 458		Belligerent
Victoria Bellalae ..	2304A	11.5.34	17	9,483	4·71	446·96	350	Mature	252, 284, 352		Vice Regal
Victoria Algiers	3004A	5.4.34	13½	7,266	4·29	311·72	330	Sr. 4	248, 263	..	Victoria Royal Ringer
Victoria Avrette	3893A	26.6.34	16	6,312	4·68	295·51	230	Jr. 2	..	..	Victoria Vice Captain
Desmond, J. J., Rochester, Jersey (4).											
Macroom Countess 2nd ..	C.R.	2.6.34	15½	4,650	4·76	221·09	230	Jr. 2	..	..	Glenalvie Statesman
Macroom Edna 2nd ..	C.R.	28.5.34	23	6,762	4·99	337·44	230	Jr. 2	..	..	Glenalvie Statesman
Macroom Farm Lass 2nd ..	C.R.	31.5.34	23½	6,615	4·55	301·02	230	Jr. 2	..	..	Glenalvie Statesman
Macroom Ferndell 2nd ..	C.R.	31.5.34	15½	4,847	4·69	227·62	230	Jr. 2	..	..	Glenalvie Statesman
Dobson, R. J. M., Acheron, Jersey (1).											
Mundroola Lady Jennawarra	18690	30.4.34	23½	8,444	4·86	410·41	350	Mature	356, 490, 422, 416		Bosun of Meadowvale
Messrs. Downie Bros., Ripplebrook, Ayrshire (2).											
Glen View Minnie 4th		7.4.34	13	5,657	4·02	227·57	250	Sr. 2	..	..	Gowrie Park Standard Bearer
Glen View Topsy 4th		12.6.34	5½	5,201	4·23	220·25	270	Jr. 3	206	..	Gowrie Park Standard Bearer
Enders, N., Stanhope, Jersey (1).											
The Wattles Valencia ..	33992	6.5.34	20	6,807	5·78	393·78	330	Sr. 4	382, 418	..	Choice Prince of Belgonia
Evans, A., Heywood, Jersey (6).											
Boronia Farm Duchess ..	43102	25.6.34	N.O.C.	5,568	5·66	315·08	230	Jr. 2	..	..	Noble of Boronia Farm
Boronia Farm May ..	23129	2.5.34	21	7,838	4·89	383·39	350	Mature	236, 181, 300, 327, 334		Frost of Castlemaddie
Boronia Farm Melba ..	43103	21.5.34	16	5,295	5·61	297·08	230	Jr. 2	..	..	Nairana Top Note
Boronia Farm Rose ..	33330	18.4.34	14½	5,421	5·77	312·81	310	Jr. 4	253, 323	..	Prince of Boronia Farm
Glenaire Silvermine 2nd ..	39855	1.6.34	15½	6,504	5·52	359·28	250	Sr. 2	254	..	Glenaire Soprano's King
Velveteen 11th of Banyule	21438	12.6.34	25½	9,593	4·93	473·26	350	Mature	426, 316, 425, 398		Wotton Airman
Findlay, T. R., Leitchville, Jersey (1).											
Leven Brae Gay Capture ..	37375	15.6.34	24	9,198	5·35	492·09	290	Sr. 3	420, 457	..	Werribee Gaypiece
Foster Bros. (Messrs.), Boisdale, Jersey (5).											
Boisdale Canary 2nd ..	43047	13.4.34	13	4,869	5·37	261·50	230	Jr. 2	..	..	Gladiator of Springhurst
Boisdale Netta 2nd ..	38047	21.6.34	12	5,076	6·31	320·48	270	Jr. 3	230	..	Gladiator of Springhurst
Boisdale Sparkle	28702	27.6.34	17	7,424	6·57	487·42	350	Mature	304, 367	..	Lord Island's Fancy of Brucevale
Hazeldale Ginger Princess..	40175	28.5.34	5½	5,102	5·40	275·51	290	Sr. 3	..	..	Dinkum of Banyule
Heather 3rd of Springhurst	18931	16.6.34	28½	9,835	4·73	465·46	350	Mature	316, 364, 437, 393, 495		Alloy of Banyule
Fraser, G. A., Addington, Ayrshire (1).											
Glengowrie Ray		16.6.34	20½	9,312	4·30	400·66	290	Sr. 3	297	..	Glengowrie Bold Baron
Freestone, P. A., Murchison, Jersey (2).											
Audley Bonnie Lass ..	C.R.	26.4.34	21½	5,312	4·29	228·02	230	Jr. 2	..	..	Belgonia Cobham
Audley Romany's Pride ..	37391	15.6.34	17½	5,686	6·19	351·99	310	Jr. 4	259, 341	..	Belgonia's Stumpy Twylish
Gay, R. G., North Devon, Jersey (3).											
Elm Grove Alfalfa ..	34020	12.4.34	19½	6,946	5·59	388·55	310	Jr. 4	272, 382	..	Clarendon Eyre Silver King
Elm Grove Alfalfa 2nd ..	..	6.4.34	19½	6,155	5·66	348·49	290	Sr. 3	296	..	Gold Star of Melrose
Elm Grove Daphne ..	39640	1.5.34	15	6,599	5·77	380·50	270	Jr. 3	334	..	Melrose Butterman
Gilchrist, A. J., Koo-wee-rup, Jersey (1).											
Clarendon Eyre Rose Marie 4th	39259	3.5.34	19½	6,312	4·87	307·71	270	Jr. 3	361	..	Clarendon Eyre Eminent's Achievement
Gregg, V., Whittlesea, Jersey (2).											
Stoneycroft Blossom 2nd ..	..	2.4.34	20	5,340	5·30	283·26	230	Jr. 2	..	..	Kantara Don Juan
Stoneycroft Una 2nd ..	..	15.5.34	18½	6,239	6·58	410·60	250	Sr. 2	..	..	Tooronga Mace
Handbury, J. E., and Sons, Toora, No. 1 Farm, Jersey (1).											
Tooravale Princess 7th ..	34056	23.6.34	30	10,110	5·91	597·36	330	Sr. 4	285, 430	..	Tooravale Goldspeck
Handbury, J. E., and Sons, Toora, No. 2 Farm, Jersey (4).											
Tooravale Lassie Fowler 4th	28734	30.5.34	19½	7,398	5·13	379·85	350	Mature	213, 257	..	Tooravale Goldspeck
Tooravale Lassie Fowler 6th	34051	27.6.34	16	6,194	6·16	381·12	350	Mature	269, 314	..	Tooravale Goldspeck
Tooravale Milkmaid 3rd ..	25906	25.6.34	13½	6,155	5·97	367·64	350	Mature	237, 280, 334		Welkin of Melrose
Tooravale Milkmaid 6th ..	34053	26.6.34	15½	7,501	6·63	497·70	330	Sr. 4	279, 344	..	Tooravale Goldspeck

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Handley, S. C., Dandenong, Jersey (1).											
Barrowby Queen 2nd ..	38809	25.5.34	21½	7,168	5·34	382·73	250	Sr. 2	286	..	Grangelea Progress
Harvey, T., Boisdale, Jersey (5).											
Edmonton Vixen ..	23050	6.6.34	30½	10,292	5·33	548·65	350	Mature	493, 502, 544, 581, 532		Big Chief of Glen Iris
Jerseyholm Bluebell 15th ..	40373	17.5.34	21½	6,280	5·64	353·88	230	Jr. 2	..	..	Werribee Master's Expert
Jerseyholm Daisy 18th ..	40375	5.6.34	25½	7,627	5·14	392·22	230	Jr. 2	..	..	Werribee Master's Expert
Jerseyholm Empress 29th ..	40376	3.4.34	16	4,998	5·67	283·32	230	Jr. 2	..	..	Werribee Master's Fox
Jerseyholm Kirsty 27th ..	40384	20.5.34	17	5,531	5·58	308·41	230	Jr. 2	..	..	Werribee Master's Expert
Henderson, W., Grasmere, Ayrshire (5).											
Carracoorte Balm 18th ..	..	1.5.34	14½	6,068	5·03	304·93	230	Jr. 2	..	..	Gerty's Producer of Carracoorte
Carracoorte Brownie 22nd..	24681	4.6.34	11	5,198	4·64	241·39	270	Jr. 3	202	..	Gerty's Producer of Carracoorte
Carracoorte Lucy 14th ..	24703	31.5.34	17	7,677	4·43	340·46	270	Jr. 3	304	..	Blue Bell's Pride of Glencourt
Glencourt Buttercup 2nd ..	24597	17.5.34	12	5,363	4·58	245·84	250	Sr. 2	..	..	Belle's Best of Glencourt
Strathkellar's Nymph ..	..	15.5.34	6	3,519	5·30	186·40	230	Jr. 2	..	..	Gerty's Producer of Carracoorte
Hore, A. J., Horfield, Illawarra Shorthorn (2).											
*Lynwood Diamond 2nd ..	..	29.4.34	24	6,090	4·83	294·45	290	Sr. 3	316	..	Jumbo of Beauna Vista
†Tabbagong Virgin 2nd ..	..	30.3.34	22½	7,208	4·41	317·55	270	Jr. 3	289	..	Tabbagong Warrior
Hore, E., Leitchville, Jersey (2).											
Ballara Lassie 3rd ..	42861	25.6.34	17½	7,510	5·89	442·24	250	Sr. 2	..	..	Brucevale Lord Fancy Madeira
Troed-Yr-Rhiw-Bettwys 2nd	42295	20.6.34	26½	8,469	5·78	489·69	250	Sr. 2	..	..	Troed-Yr-Rhiw Masterpiece
Huffer, J. A., Gormandale, Jersey (1).											
Glen Valley Quick Sand ..	23218	18.6.34	17	7,128	5·55	395·84	350	Mature	331, 471, 460, 475, 354		Waverley's Count of Glen Valley
Hutchison, H. McD., Yan Yean, Jersey (1).											
Melrose Graceful Duchess 48th	40974	25.6.34	15	7,433	6·31	469·27	290	Sr. 3	375	..	Melrose Clementine 2nd's Masterpiece
Hutchinson, J. and Sons, Somerville, Jersey (5).											
Somerville Babs 6th ..	41977	27.4.34	41½	13,206	5·14	678·58	270	Jr. 3	377	..	Banyule Aeronaut
Somerville Babs 11th ..	46149	22.6.34	22	6,448	5·59	360·29	230	Jr. 2	..	..	Somerville Renown
Somerville Cloth of Gold ..	46152	2.5.34	20½	6,062	5·70	345·71	230	Jr. 2	..	..	Somerville Reputation
Somerville Rosebud 2nd ..	41980	26.5.34	24½	7,019	5·80	407·37	250	Sr. 2	..	..	Somerville Reputation
Curio 4th of St. John's ..	21157	24.6.34	22	7,584	6·21	470·74	350	Mature	..	..	Valda's Lad of Comely Banks
Ingram, W. K., Laibert, Jersey (1).											
Stonehaven Mary Maitland	46208	18·5·34	15½	5,486	4·36	239·22	230	Jr. 2	..	..	Mt. Violet Maitland
King, H. W., Warragul, Jersey (1).											
Karoola Freda	37699	11.6.34	20½	5,813	4·96	288·65	250	Sr. 2	..	..	Glenallen Mariposa
Knowles, T., Dandenong, Ayrshire (1).											
Dandy Limelight ..	23609	2.4.34	8	8,942	4·55	406·48	330	Sr. 4	284, 340	..	Beleura Sarchedon
Lennie, Mrs. E. M., Tongala, Jersey (2).											
The Valley Merella 2nd ..	23259	12.5.34	12	4,817	5·45	262·73	350	Mature	267, 372, 415, 405, 317, 269		Stargazer of the Valley
The Valley Poppy 2nd ..	26024	22.4.34	17	6,204	5·49	340·84	350	Mature	334, 429 465		Black Thorn of Fair View
Le Noury, E., Werribee, Guernsey (3).											
Melbourne Matron ..	3695	14.6.34	6	5,494	5·28	290·46	290	Sr. 3	275	..	Melbourne Don 7th
Werribee Merry Maid ..	2638	8.5.34	12	5,315	5·64	299·69	330	Sr. 4	214, 310	..	Yarraview Saxon
Werribee Pansy's Viola ..	..	8.4.34	10	3,525	4·83	170·36	230	Jr. 2	..	..	Melbourne Don 7th
Longerenong Agricultural College, Dooen, Ayrshire (3).											
Longerenong Cootamundra Wattle	26552	14.6.34	17½	5,548	4·41	244·42	230	Jr. 2	..	..	Longerenong Baron
Longerenong Laureate 2nd	26558	16.6.34	19½	5,682	4·51	256·39	230	Jr. 2	..	..	Longerenong Noble
Longerenong Palm 3rd ..	26563	26.5.34	21½	5,647	4·05	228·44	230	Jr. 2	..	..	Longerenong Noble
Lyon, C. G., Heidelberg, Jersey (2).											
Banyule Molly 36th ..	34187	7.4.34	24	8,165	5·07	413·69	290	Sr. 3	..	..	Concentration of Banyule
Banyule Silvermine 63rd ..	28844	24.4.34	23	8,159	5·75	469·43	330	Sr. 4	343, 329	..	Air Lord of Banyule
Lyon, W. H., Sale, Jersey (4).											
Avon Blanchette 15th ..	..	1.5.34	11	5,291	5·83	308·40	230	Jr. 2	..	..	Jessie 13th's Count of Melrose
Avon Daphne 4th ..	38731	31.5.34	16½	7,550	5·91	446·45	350	Mature	353	..	Jessie 13th's Count of Melrose
Avon Daphne 6th ..	38732	8.6.34	15½	6,602	4·80	316·77	270	Jr. 3	..	..	Jessie 13th's Count of Melrose
Avon Lady Elector 5th ..	..	28.5.34	11	5,934	5·58	331·15	330	Sr. 4	..	..	Jessie 13th's Count of Melrose

* 210 days in test, herd withdrawn. † 240 days in test, herd withdrawn.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Macauley, C. W., Rochester, Jersey (1).											
Taranah Fair Lady ..	42116	6.4.34	19	6,522	5·28	344·14	290	Sr. 3	286	..	Taranah Submarine
McInnes, A. A., Gunbower, Dairy Shorthorn (1).											
Loch Ness Roseleaf ..	..	20.5.34	9½	5,068	4·13	209·48	290	Sr. 3	279	..	Royal Duke of Derrimut
McNabb, G., and Son, Irrewillipe East, Jersey (10).											
Avalon Noble's Pansy 3rd..	36833	15.5.34	18	6,855	6·14	420·73	290	Sr. 3	398, 294	..	Noble of Avalon
Cora of Linga Longa ..	15430	16.4.34	16	7,093	5·73	406·48	350	Mature	339, 307, 456, 491, 531, 539, 509, 439, 400		Dawn of Warenda
Maxon Bright Vanilla ..	37849	25.6.34	15	5,497	5·90	324·06	290	Sr. 3	356, 344	..	Maxon Starbright Prince 4th
Maxon Count's Lodestone..	40932	1.5.34	18	6,150	5·79	356·25	250	Sr. 2	341	..	Maxon Count Graceful
Maxon Count's Pansy ..	40933	20.5.34	14	6,694	5·73	383·62	250	Sr. 2	286	..	Maxon Count Graceful
Maxon Count's Pearl ..	45059	30.3.34	16	5,103	5·27	268·99	230	Jr. 2	..	..	Maxon Count Graceful
Maxon Lodie	34219	5.6.34	13	5,055	5·49	277·48	310	Jr. 4	274, 283	..	Maxon Starbright Prince 4th
Maxon Noble's Daisy ..	34224	14.4.34	20	6,868	5·97	409·98	330	Sr. 4	222, 379, 339		Avalon Noble 8th
Maxon Noble's Pansy ..	29078	24.6.34	21	9,550	4·97	474·90	350	Mature	334, 396, 339		Noble of Avalon
Maxon Tiare	40939	20.5.34	17	4,521	5·90	266·55	250	Sr. 2	240	..	Maxon Mercedes Chief
Marshall, M., Sale, Jersey (1).											
Hewick Kirsty	44305	1.4.34	13½	5,154	5·91	304·68	250	Sr. 2	..	..	Brucevale Lord Madeira
Meier, A., Kilmore, Jersey (1).											
Fairview Pearlshell ..	34254	1.4.34	17½	5,031	4·47	224·65	310	Jr. 4	..	..	Burnside Royalist
Middleton, E. M., Hamilton, Jersey (1).											
Strathkellar Zoe 2nd ..	46240	7.4.34	17	4,518	4·58	206·98	230	Jr. 2	..	..	Woodside Reprieve's Volunteer
Mitchell, R. H., Linton, Jersey (1).											
Clifford Farm Lady Jean ..	43401	19.6.34	25	6,870	5·66	388·93	230	Jr. 2	..	..	Wompini V.C.
Moore, J., and Co., Yarram, Jersey (1).											
Tooloonook Boltonia 7th ..	46464	23.4.34	21	5,516	4·69	258·78	230	Jr. 2	..	..	Tooloonook Carobs Hero
Tooloonook Heather 2nd ..	..	27.6.34	6	6,299	4·69	291·06	330	Sr. 4	228	..	Heroic of Somerville
Murray, H. C., Murrabit West, Jersey (4).											
Colber Jessie	38231	11.5.34	9	6,919	5·72	395·48	330	Sr. 4	275, 327, 346		Linden Grey Laddie
Melrose Zoe 11th ..	40985	20.6.34	20½	8,249	5·46	450·57	290	Sr. 3	297	..	Melrose Clementine 2nd's Masterpiece
Moorunduden Sweet Flower	41113	8.6.34	11	5,566	5·37	299·02	230	Jr. 2	..	..	Lord Lily 2nd's Meryula
Moorunduden Sweetheart ..	29194	26.5.34	14½	5,531	5·80	320·96	350	Mature	274	..	Sweet Pariel 2nd's Lad of Boorene
Nancarrow, Bros., Kerang, Jersey (1).											
Bellaire Duchess	28585	7.6.34	17½	7,055	5·08	358·44	350	Mature	338	..	Prince of Bellaire
Nicholas, A. M., Sherbrook, Jersey (3).											
Jubilee Crocus	23389	8.4.34	16	8,989	5·64	506·67	350	Mature	461, 417	..	Goddington Winks 6th
Jubilee Montbretia ..	40433	31.3.34	12	5,543	5·28	292·73	270	Jr. 3	269	..	Jubilee Asterlight
Jubilee Weigelia	40438	1.4.34	16½	6,880	5·35	367·93	270	Jr. 3	223	..	Jubilee Asterlight
Nilsson, P.O., Tynong, Jersey (1).											
Glen Iris Nasturtium ..	18790	19.6.34	21	7,439	5·20	386·83	350	Mature	331, 234, 334		Mercedes Sweet Duke of Glen Iris
Nolte, E. H., Merino, Jersey (4).											
Nairana Fairy 3rd ..	29231	29.5.34	7	7,172	4·82	345·87	350	Mature	396, 411, 371		Garantie's Colonel of Penrhyn
Nairana Fairy 4th ..	29232	28.4.34	4	5,321	5·73	304·64	350	Mature	..	..	Burnside Audacious
Nairana Fairy 7th ..	29235	29.5.34	8	6,660	4·67	311·32	330	Sr. 4	297, 394, 320		Strathbow Goldstar
*Nairana Starfinch 2nd ..	..	24.6.34	4	4,260	5·15	219·41	250	Sr. 2	..	..	Banyule Anticipation
Osborne, H. M., Poowong East, Jersey (2).											
Conaire Rosebud	39334	15.6.34	14½	7,017	5·35	375·09	290	Sr. 3	259	..	Banyule Macoa
Bunty 2nd of Grangelea ..	24272	26.5.34	14	7,007	5·62	393·88	350	Mature	357, 314, 345, 339		Golden Twylish
Overend, Mrs. A. C., Sale, Jersey (2).											
Bon Accord Belle ..	33576	4.4.34	19½	7,320	5·85	428·06	350	Mature	293, 335, 288		Bon Accord David
Emma Bell of Waratta ..	23505	6.4.34	13½	6,464	5·82	376·42	350	Mature	314, 324, 348, 380, 287		Jubilee Lifelight
Pearson, J., Nerrena East, Jersey (2).											
Warrawee Heather		7.6.34	14	5,528	5·38	297·48	230	Jr. 2	..	..	Banyule Tympani
Warrawee Soprano		6.6.34	7	5,297	6·13	324·92	230	Jr. 2	..	..	Banyule Tympani
Pollard, C. F., Bonegilla, Jersey (1).											
Bonegilla Jonquil ..	38053	1.6.34	20½	7,408	5·21	385·92	310	Jr. 4	321	..	Springhurst Byron

* 240 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test.	Milk. lb.	Average Test.	Butter Fat.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Prout, A., Leongatha, Jersey (5).											
Verbena 17th of Brookfield	38532	20.4.34	19½	5,737	5·58	320·11	350	Mature	366	..	Werribee Wyandotte Star
Pineleigh Mermiss ..	38080	5.4.34	19½	6,710	5·31	356·00	310	Jr. 4	317, 290	..	Alladin of Wattle Vale
Pineleigh Wildflower ..	45730	16.4.34	16	5,146	5·42	279·05	270	Jr. 3	..	..	Alladin of Wattle Vale
Daphne of Wattle Vale ..	16236	24.4.34	22	6,102	4·40	268·35	350	Mature	239, 212, 353, 453, 447, 412, 390, 352		Auburn of Kelburn
Golden Girl of Wattle Vale	24307	20.4.34	26	7,545	5·62	423·65	350	Mature	366, 413, 481, 477, 409		Duke of Melrose
Messrs. Quigley and Bennett, Yinnar, Jersey (4).											
Ellendale Bluebell 5th		14.6.34	16	5,582	5·67	316·90	230	Jr. 2	..	..	Mistletoe 2nd's Treasure of Lyninig
Ellendale Kirsty 5th ..	29322	11.6.34	20	7,259	5·60	406·61	350	Mature	288, 298	..	Mistletoe 2nd's Treasure of Lyninig
Ellendale Kirsty 10th ..	43702	25.5.34	12	4,158	5·84	242·82	250	Sr. 2	..	..	Mistletoe 2nd's Treasure of Lyninig
Linga Longa Banksia 5th ..	40728	16.6.34	20	6,774	6·68	452·23	330	Sr. 4	245	..	Brilliant Dawn of Linga Longa
Read, J. D., Springhurst, Jersey (17).											
Aconite of Springhurst ..	21598	27.6.34	28	9,338	5·27	492·44	350	Mature	417, 373, 500, 588, 567		Othman of Springhurst
Springhurst Alsyke 4th ..	29329	26.4.34	17½	7,624	6·20	472·70	350	Mature	303, 406, 456, 514		Starbright's Prince of Glen Iris
Springhurst Brinjal ..	46181	11.4.34	16½	6,434	5·54	356·48	230	Jr. 2	..	..	Bellefaire Seaborn Successor
Springhurst Coronation Alsyke	46182	15.6.34	15	5,186	6·23	322·85	230	Jr. 2	..	..	Design's Ruler
Springhurst Coronation Nightshade	46183	7.4.34	19½	6,827	5·50	375·53	230	Jr. 2	..	..	Design's Ruler
Springhurst Coronation Tulip	46185	3.4.34	16	5,411	5·11	276·37	230	Jr. 2	..	..	Design's Ruler
Springhurst Blonde Medick	46178	13.4.34	16½	5,397	5·65	304·71	230	Jr. 2	..	..	Bellefaire Seaborn Successor
Springhurst Soya ..	38107	17.4.34	21½	7,361	5·64	415·21	270	Jr. 3	366	..	Starbright's Prince of Glen Iris
Springhurst Sybil Alsyke ..	46189	25.4.34	25	8,064	5·43	438·25	230	Jr. 2	..	..	Bellefaire Seaborn Successor
Springhurst Sybil Medick ..	41999	16.4.34	14	5,970	6·29	375·79	250	Sr. 2	356	..	Bellefaire Seaborn Successor
Springhurst Sybil Narcissus	46191	21.4.34	22½	7,557	4·88	369·01	230	Jr. 2	..	..	Bellefaire Seaborn Successor
Springhurst Sybil Romneya ..		7.4.34	19	7,464	5·81	434·01	250	Sr. 2	335	..	Bellefaire Seaborn Successor
Springhurst Sybil Tecoma ..	46193	9.5.34	16	6,894	4·84	333·26	230	Jr. 2	..	..	Bellefaire Seaborn Successor
Springhurst Romneya 3rd ..	29339	31.3.34	21	7,671	5·91	453·02	330	Sr. 4	442, 517, 399		Starbright's Prince of Glen Iris
Springhurst Sybil Tomato ..	46194	2.5.34	19	8,260	5·22	431·25	230	Jr. 2	..	..	Bellefaire Seaborn Successor
Springhurst Tomato ..	18939	30.4.34	26½	9,575	5·17	494·86	350	Mature	302, 533, 604, 567, 594, 563, 544		Allay of Banyule
Springhurst Tomato 2nd ..	26175	6.5.34	21½	7,993	5·87	469·26	350	Mature	340, 410, 542, 462		Starbright's Prince of Glen Iris
Rechenberg, J. F., Marshall, Ayrshire (3).											
Camelot Doreen	22578	9.6.34	11	8,225	4·98	409·87	350	Mature	341	..	Sparrovale Ronald
*Camelot Mavis ..	24666	30.5.34	N.O.C.	7,470	4·26	318·50	330	Sr. 4	343	..	Scotswood Adonis Earl
Camelot Robina	24669	9.5.34	13	6,494	4·84	314·57	290	Sr. 3	290	..	Scotswood Adonis Earl
Richardson, W. S., Bacchus Marsh, Jersey (1).											
Sutton Lea Patricia ..	26438	2.6.34	24	7,715	5·54	427·45	350	Mature	285, 250, 313, 457		Lady Lottie's Prince of Belgonia
Rodda, W. G., Warracknabeal, Jersey (2).											
Clarendon Eyre Country Mouse	33941	30.3.34	N.O.C.	5,898	5·26	310·28	350	Mature	324, 403	..	Araluen Chloe's V.C. of Clarendon Eyre
Toolang Carnation ..	36998	23.4.34	N.O.C.	5,625	4·85	272·84	290	Sr. 3	392, 400	..	Vanilla 2nd of Tavistock
Ronalds, O., Tarago, Jersey (2).											
Jindivick Sunbeam ..	40415	20.5.34	26½	10,112	4·87	492·71	290	Sr. 3	386	..	Somerville Sion
Somerville Air Beauty ..	38183	13.4.34	23	9,368	5·41	506·99	290	Sr. 3	434	..	Banyule Aeronaut
Runciman, C. M., Murraydale, Jersey (2).											
Bideford Cream Stockings 3rd	38911	22.6.34	6½	4,274	5·23	223·45	290	Sr. 3	280, 264	..	May's Twylish of Jersey Vale
Bideford Modest 3rd ..	..	6.6.34	14	5,464	5·85	319·64	250	Sr. 2	..	..	Beverley Laddie
Ryan, D. M., and Sons, Pirron Yallock, Illawarra Shorthorn (3).											
Basin Banks Butterfly ..	5089	16.5.34	13	9,069	3·93	356·05	290	Sr. 3	356	..	Redman of Glenburn
Birdie of Basin Banks ..	2845	1.4.34	30	10,754	3·91	420·91	330	Sr. 4	252, 322	..	Redman of Glenburn
Lawarra Opal	16506	27.4.34	N.O.C.	10,433	3·98	415·38	350	Mature	301, 451	..	Mascot of Lawarra
Salesian College, Sunbury, Ayrshire (1).											
Rupertswood Alice ..	26721	5.4.34	10	5,895	4·36	257·06	250	Sr. 2	..	..	Billy of Rupertswood
Salesian College, Sunbury, Friesian (4).											
Elgin Glen Ashlynn		19.5.34	23½	10,305	3·43	353·63	230	Jr. 2	..	..	Burnbank Majoe Dutchman
Ingolston Domino Beauty ..	3528	20.6.34	11	10,484	3·69	386·61	350	Mature	..	..	Ingolston Dutch Domino
Ingolston Joan	..	20.4.34	21	9,840	3·37	332·02	230	Jr. 2	..	..	Cordyline Cremona Pontiac
Ingolston Milkmaid ..	4101	15.6.34	7½	9,594	3·96	380·34	290	Sr. 3	..	..	Greenvale Ideal Segis

* 240 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test.	Milk. lb.	Average Test.	Butter Fat.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Schier, A. H., Kernot, Ayrshire (3).											
Glen Afton Gay Girl ..	17947	11.4.34	22	9,282	3·90	362·20	350	Mature	268, 361	..	Donald Scot of Gleneira
*Scotswood Lady Vim ..	24341	30.5.34	4	2,205	4·61	101·55	330	Sr. 4	207	..	Federal of Warrook
†Scotswood Shirley ..	22079	23.5.34	24	8,070	4·71	380·25	350	Mature	304, 264	..	Federal of Warrook
Schlipalius, A. J., Kilmany South, Jersey (2).											
Butterfly of Fairbank ..	18962	4.4.34	15	4,979	5·51	274·30	350	Mature	185, 313, 310, 251, 320, 327		High Choice of Melrose
Fairbank Princess Ida ..	39702	16.5.34	14½	4,366	5·99	261·64	250	Sr. 2	267	..	Wompini Beau Brummell
Simpson, T. E., and Son, Lower Ferntree Gully, Jersey (1).											
Kantara Starbright ..	40492	25.4.34	19	5,447	5·89	320·63	270	Jr. 3	368	..	Ku Ku Fashion Plate
Smith, G., and W., Fish Creek, Jersey (3).											
Rydon Alice	26364	26.6.34	16	5,915	5·51	326·01	350	Mature	321, 326, 348		Peerless 19th Prince of Melrose
Rydon Onyx	33766	16.6.34	23	7,688	5·90	453·47	330	Sr. 4	355, 382	..	Burnside Monitor
Rydon Pearl	29490	22.6.34	18	6,696	5·21	349·03	350	Mature	247, 327, 362		Burnside Monitor
Sutton, H., and Sons, Callignee, Jersey (4).											
Latrobe Hazel	28970	18.6.34	16	5,424	5·35	289·97	350	Mature	178, 221, 285		Latrobe Molly's Airman
Omatoroa Cream Rose ..	38381	20.6.34	11½	4,884	5·73	279·84	310	Jr. 4	233, 234	..	Waverley's Count of Glen Valley
Omatoroa Maybird ..	33807	4.6.34	12	4,989	5·60	279·10	330	Sr. 4	236	..	Waverley's Count of Glen Valley
Omatoroa Stella's Joy ..	45554	14.5.34	10	3,968	5·78	220·52	270	Jr. 3	..	..	Banyule Joystick
Thomas and Taylor, Hamilton, Ayrshire (1).											
Carracoorte Lucy 13th ..	24702	20.5.34	22½	8,376	4·57	382·68	290	Sr. 3	..	..	Carracoorte Lochiel
Tomasetti, B. G., Drouin West, Ayrshire (1).											
Glencorren Lilac	22832	2.6.34	27	9,623	5·07	488·09	330	Sr. 4	393, 378	..	Scotswood Michael 2nd
Tuckey, J. F., Alberton, Ayrshire (4).											
Tregorland Ingenue ..	22155	5.5.34	12½	8,646	5·11	442·17	350	Mature	236, 290, 335		Gowrie Park Scotchman
Tregorland Kedge ..	20792	14.5.34	16½	9,010	4·48	403·46	350	Mature	285, 357, 320, 365		Gowrie Park Scotchman
Tregorland Kirk	22161	10.5.34	19	9,026	4·03	364·17	350	Mature	230, 316, 316		Tregorland Imperial
Tregorland Kitty ..	19080	12.6.34	21	8,104	5·04	407·94	350	Mature	300, 302, 322, 410		Gowrie Park Scotchman
Vagg, E. J., Leongatha, Jersey (3).											
Bonnay Lady's Love ..	29564	12.4.34	16	7,527	5·81	437·54	350	Mature	333, 425, 496, 495, 497		Mona's Duke of Woorayl
Bonnay Midget's Winnie ..	38976	13.6.34	19	6,003	5·59	335·67	290	Sr. 3	339	..	Welbourne Handsome Boy
Bonnay Mystery Maid 4th	38977	16.6.34	17½	5,193	5·68	294·97	290	Sr. 3	280, 300	..	Bonnay Handsome Boy
Van Brummelen, J. K., Ferntree Gully, Friesian (3).											
Bolero Inka Joy	3871	25.6.34	N.O.C.	10,355	3·51	363·44	310	Jr. 4	248, 220	..	St. Albans Queen's Korndyke 2nd
Bolero Korndyke Maria ..	..	23.5.34	27	10,253	3·36	344·72	270	Jr. 3	224	..	St. Albans Queen's Korndyke 2nd
Bolero Rose Marie ..	3360	12.4.34	21	13,425	3·00	402·99	350	Mature	370, 336, 289		Burnbank Inka Sylvia's Lad
Messrs. Vaughan Bros., Girgarre, Jersey (3).											
Lynroy Pixie	40835	1.5.34	22	6,910	6·46	446·66	350	Mature	314, 462, 263		Sherborne Wyandotte's King
Lynroy Gem 2nd ..	38461	22.4.34	20	7,333	4·95	362·84	330	Sr. 4	325, 370, 382		Sherborne Wyandotte's King
Lynroy Vanilla	38466	1.5.34	21	6,725	5·73	385·63	290	Sr. 3	370, 380	..	Sherborne Wyandotte's King
Wade, W. J., Stratford, Jersey (1).											
Inverbroom Silver Molly ..	40289	25.4.34	19½	6,089	5·01	305·26	250	Sr. 2	219	..	Economist of Aveley
Walker, C. S., Swan Hill, Jersey (1).											
Gum Park Cream Lass ..	44232	13.5.34	14	5,264	5·04	265·63	230	Jr. 2	..	..	Starlight of Bellair
West, J. C., Notting Hill, Australian Illawarra Shorthorn (1).											
‡Birdie 2nd of the Pines ..	18146	15.5.34	4	8,830	4.18	368.88	350	Mature	282, 387, 391		Hero of Lemon Grove
White, R. T., Cardigan, Ayrshire (1).											
Madge of Drayton ..	7256	4.4.34	N.O.C.	9,377	3·71	348·27	350	Mature	336	..	Blue Bob of Glengowrie
Wilson, D. C., Derrinallum, Jersey (6).											
Ayton Law Elaine 2nd ..	38757	28.5.34	6	4,590	5·30	243·29	250	Sr. 2	126	..	Wagga Yambil's Goddington Noble
Ayton Law Fern	25654	16.4.34	12	6,791	4·28	290·51	350	Mature	229, 237, 301, 198		Wagga Yambil's Goddington Noble
Ayton Law Fern 3rd ..	38758	30.5.34	6	7,016	4·59	321·99	270	Jr. 3	191	..	Ayton Law Quality's Noble 2nd
Ayton Law Noble's Topsy 3rd	38760	20.6.34	N.O.C.	2,847	6·09	173.52	270	Jr. 3	..	..	Ayton Law Quality's Noble 2nd
Brightside Bessie ..	29472	27.4.34	12	5,180	5·01	259·71	350	Mature	288, 313, 249		Royal Gem of Somerville
Melksham Pansy 20th ..	33924	12.4.34	8	4,554	5·51	251·10	330	Sr. 4	299, 215	..	Royal Duke of Melrose

* 180 days in test. † 240 days in test. ‡ 257 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Order of Merit.	Previous Yields of Butter Fat.	Sire.
Wood, J. V. M., Heidelberg, Jersey (4).											
Clarendon Eyre Little Buttercup 5th	43386	1.4.34	16½	5,135	6·23	319·77	230	Jr. 2	..	..	Ruby's Beau (Imp.)
Clarendon Eyre Tangerine 3rd	38555	14.4.34	26	10,386	4·46	462·78	310	Jr. 4	356, 404	..	Eminent's Achievement of Clarendon Eyre
Clarendon Eyre The Dairymaid 2nd	43397	5.5.34	17½	5,342	5·21	278·06	230	Jr. 2	..	..	Ruby's Beau (Imp.)
Clarendon Eyre Waltz Dream	33953	27.4.34	26	9,278	5·33	494·25	350	Mature	368, 452, 447	..	Eminent's Achievement of Clarendon Eyre
Xavier College, Kew, Jersey (2).											
Hill Crest June	37689	13.6.34	N.O.C.	8,141	4·73	384·71	330	Sr. 4	..	..	Karalee Duke
Xavier Gaiety Girl 3rd		31.5.34	17½	6,631	5·75	381·57	230	Jr. 2	..	..	Rosecliff Mariposa's Master

TESTED SIRES

Hereunder is a list of sires one or more of whose progeny in the test for the quarter ended 31st March last yielded 100 lb. butter-fat in excess of that required to qualify for certificate. The quantity of butter-fat required for certificate in the various classes plus the additional 100 lb. is indicated at the top of the several columns, and the figures shown opposite the name of each sire are the yields of butter-fat from individual heifers or cows by that sire.

Name of Sire.	Breed.	CLASS. Jr. 2 330 lb.	Sr. 2 350 lb.	Jr. 3 370 lb.	Sr. 3 390 lb.	Jr. 4 410 lb.	Sr. 4 430 lb.	Mature and over 450 lb.
Admiral Collingwood	Jersey ..	..	..	..	..	..	..	591
Admiral of Leura	Jersey ..	..	..	..	..	..	504	581
Air Lord of Banyule	Jersey ..	..	..	..	..	..	469	..
Alloy of Banyule	Jersey ..	..	..	..	..	..	..	495
Avalon Mercedes Chief 16th ..	Jersey ..	..	..	..	517	..	..	..
Aveley Drummer	Jersey ..	..	..	..	474	..	..	..
Banyule Aeronaut	Jersey ..	..	..	679	507	..	..	..
Beau Brummel of Banyule	Jersey ..	..	..	..	..	..	..	452
Bellefaire Seaborn Successor ..	Jersey ..	356, 438, 369, 333, 431	376, 434	..	..	..	453	469
Belligerent	Red Poll ..	..	..	..	..	..	..	480
Big Chief of Glen Iris	Jersey ..	..	..	..	..	..	..	549
Blackwood Valley Skim	Jersey ..	..	..	..	411	..	..	..
Brilliant Dawn of Linga Longa ..	Jersey ..	..	..	..	..	..	452	..
Brucevale Lord Fancy Madeira ..	Jersey ..	..	442	..	..	..	..	..
Brucevale Lord Starbright	Jersey ..	429	..	..	..	..	..	..
Burnbank Majoe Dutchman ..	Friesian ..	354	..	..	..	..	..	..
Burnside Monitor	Jersey ..	..	..	..	..	..	453	..
Clarendon Eyre Student Prince ..	Jersey ..	..	401	..	..	..	..	..
Concentration of Banyule	Jersey ..	..	..	..	414	..	..	..
Cordyline Cremona Pontiac	Friesian ..	332	..	..	..	..	..	..
Curiosity's King of Comely Banks ..	Jersey ..	..	356	..	..	..	597	..
Design's Ruler (imp.)	Jersey ..	376	..	..	..	..	..	..
Dominion Oakdale	Friesian ..	..	..	..	510	..	..	..
Eminent's Achievement of Clarendon Eyre	Jersey ..	..	..	..	..	463	..	494
Gadabout of Danton	Jersey ..	..	..	..	..	..	..	572
Glenaire Soprano's King	Jersey ..	..	359	..	..	..	..	..
Gleneira Briton	Ayrshire ..	..	..	..	..	..	..	456

TESTED SIRES—*continued.*

Name of Sire.	Breed.	CLASS.						
		Jr. 2 330 lb.	Sr. 2 350 lb.	Jr. 3 370 lb.	Sr. 3 390 lb.	Jr. 4 410 lb.	Sr. 4 430 lb.	Mature and over 450 lb.
Glengourie Bold Baron	Ayrshire	..	..	..	401	..	..	..
Goddington Winks 6th	Jersey	..	..	..	..	..	..	507
Grangelea Progress	Jersey	..	383	..	..	..	..	..
Lord Island's Fancy of Brucevale	Jersey	..	..	..	..	..	..	487
Maxon Count's Graceful	Jersey	..	356 383	..	..	..	..	..
Melrose Butterman	Jersey	..	..	381	..	..	..	..
Melrose Clementine 2nd's Masterpiece	Jersey	..	..	..	469 451	..	..	..
Napoleonette's Golden Oxford	Jersey	..	..	380	..	..	..	..
Noble of Avalon	Jersey	..	..	..	421	..	..	475
Othman of Springhurst	Jersey	..	..	..	..	..	..	492
Peer of Lewisham	Jersey	..	..	..	496	..	447	..
Preston Royal Fancy	Jersey	..	386	..	..	..	..	..
Rosecliff Mariposa's Master	Jersey	382	..	..	..	..	..	..
Scotswood Michael 2nd	Ayrshire	..	..	..	..	..	488	..
Scottish Fame of Gowrie Park	Ayrshire	..	..	..	..	..	..	594
Somerville Renown	Jersey	360	..	..	..	..	..	..
Somerville Reputation	Jersey	346	407	..	..	..	..	..
Somerville Sion	Jersey	..	..	..	493	..	..	..
Staghorn Master's Defiance	Jersey	..	..	..	..	426	..	..
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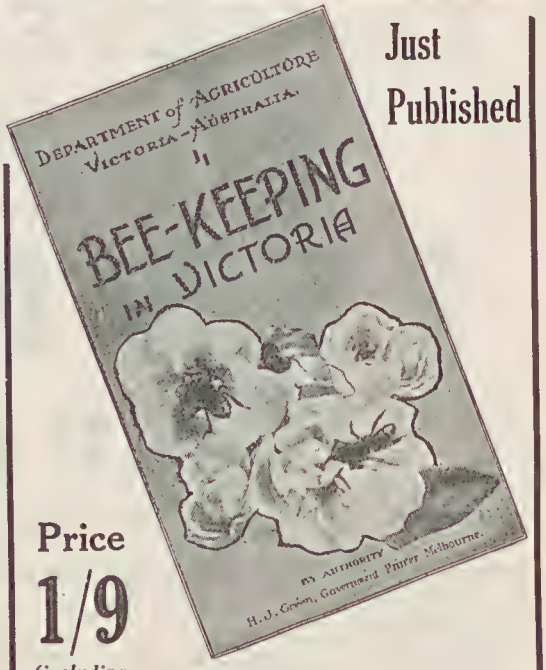

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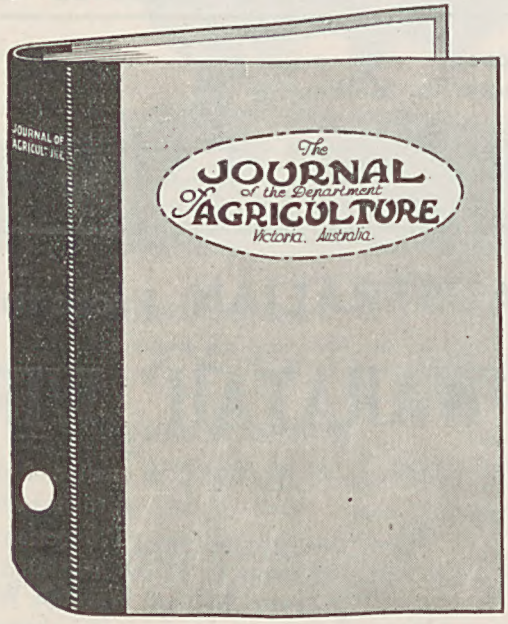

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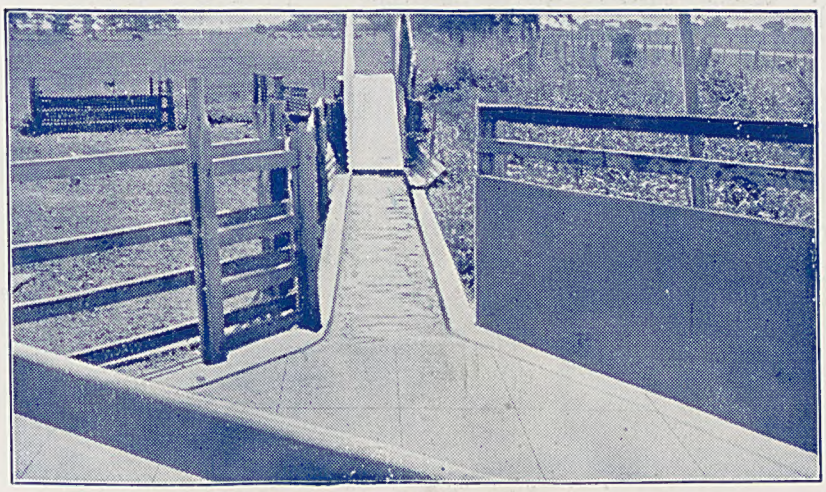

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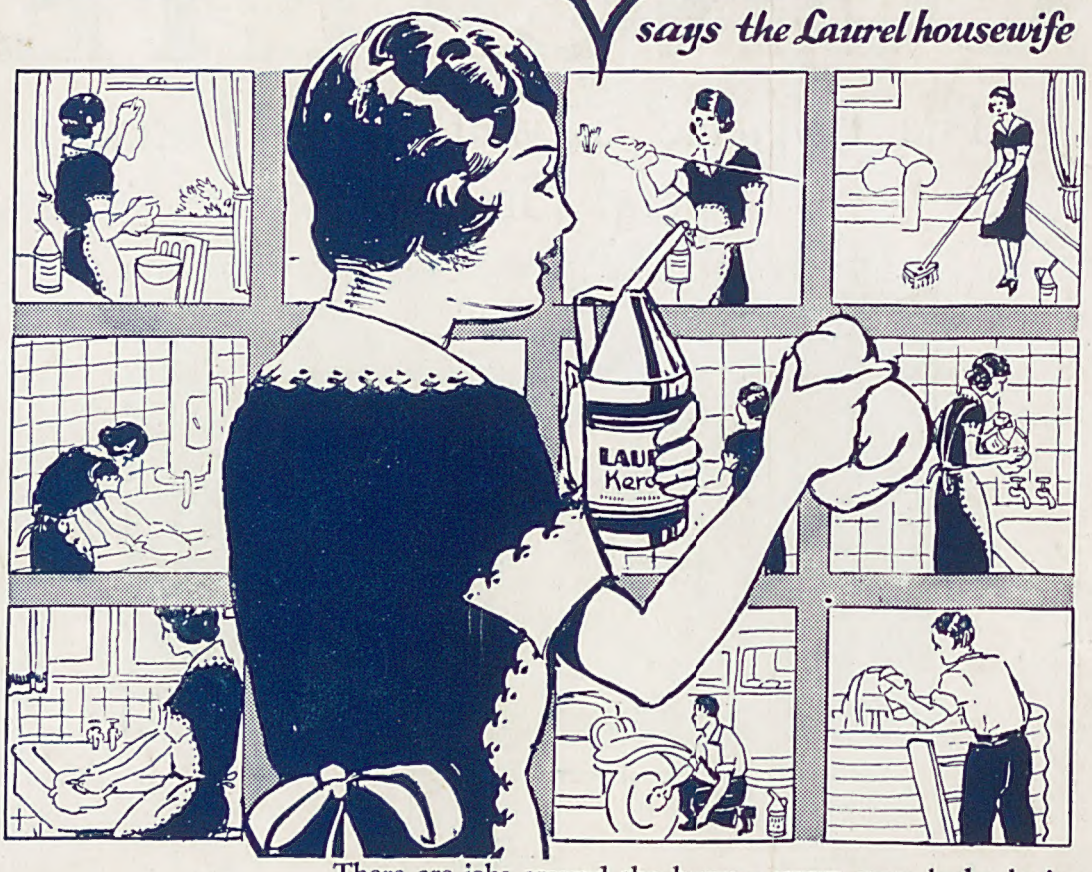

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